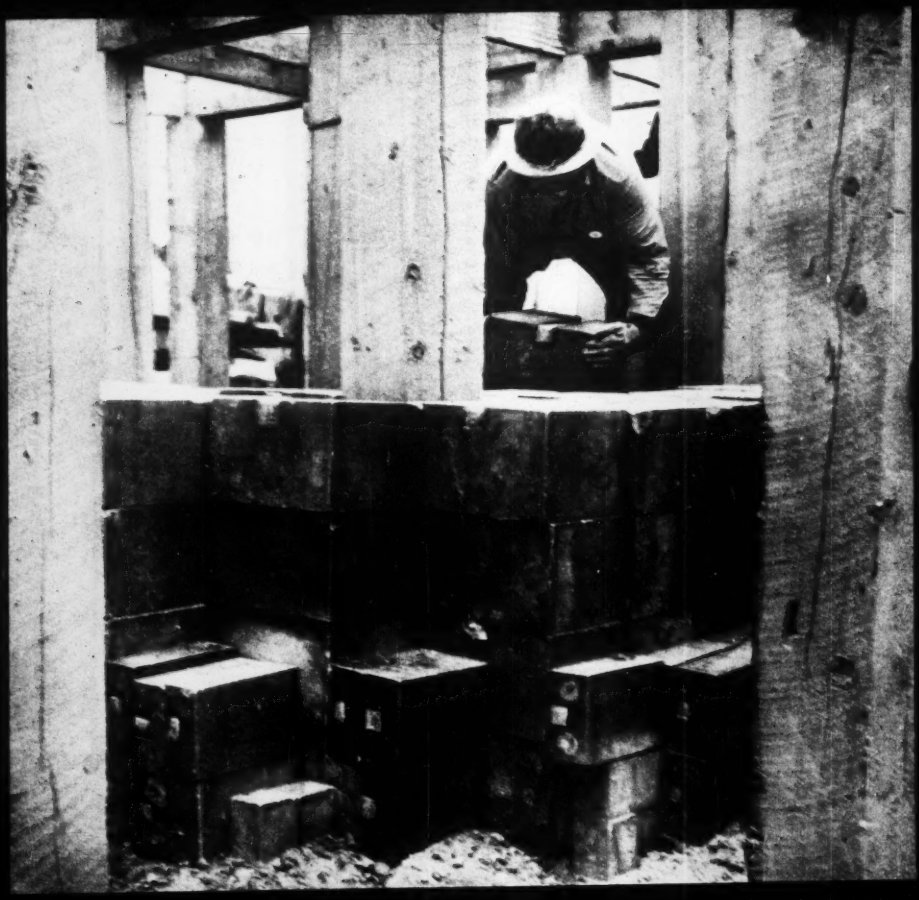
ENGINEERING NEWS-RECORD



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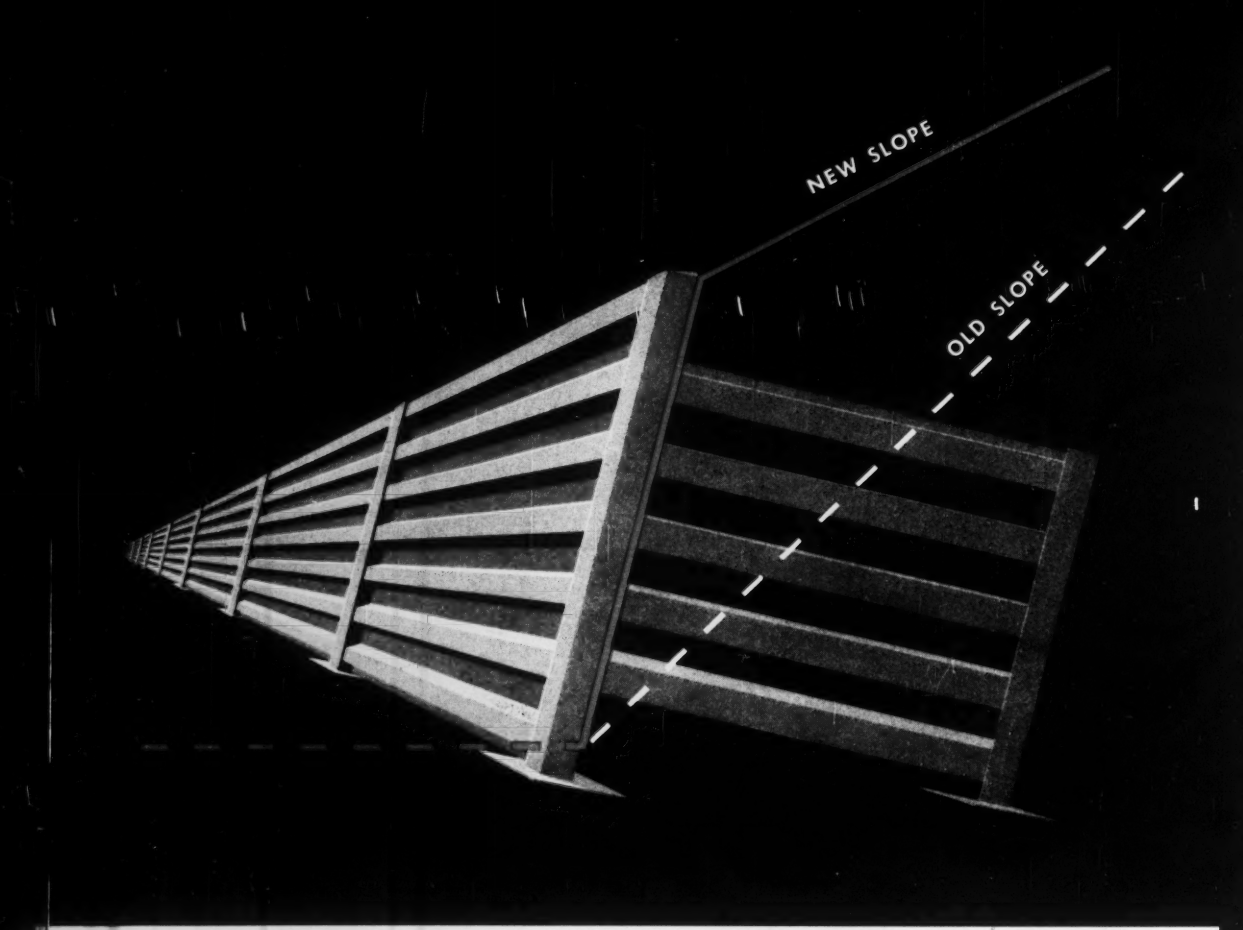

A new slant on the "angle of repose"

When unstable slopes seek their "angle of repose" they often cause a lot of trouble. Engineers used to solve such problems with heavy massive retaining walls. Then Armco engineers had a new slant. They said: "Why not make earth itself do most of the work?" The result—Armco Bin-Type Retaining Wall.

The advantages of this flexible metal wall are obvious. Less material need be transported to the job site. Handling is easier and less excavation is required. Individual units are nestable for shipment and storage.

Unskilled men do the work quickly using only hand tools. Armco Walls are adaptable to curves and changes in elevation; can be extended or completely salvaged. Thousands of installations prove them ideal for unstable slopes, limited right-of-ways, stream erosion and similar uses.

Making products simpler and more efficient has been a prime goal at Armco for more than 40 years. So has the designing of products to meet specific needs. Today you can bring your drainage and construction problems to Armco with full assurance that you will receive all the benefits of long experience, extensive research and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us.

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

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SUBSIDIARY OF ARMCO STEEL CORPORATION

Structural Plate Pipe and Arches ★ Corrugated Metal Pipe ★ Welded Steel Pipe
FLEX-BEAM Guardrail ★ Water Control Gates ★ Retaining Walls ★ STEELOX Buildings
Sheeting ★ Tunnel Liner ★ Subdrainage Pipe ★ End Sections ★ Pipe Piling and Pile Shells

B.F.Goodrich

S. J. Cohen Construction Co equipment operating at Morillton, Ark.

Working on the levee with 33-ton loads —this job calls for Super Traction!

WORKING on a levee enlargement job, the bottom-dump Euclid shown above is being loaded with over fifteen cubic yards of fill dirt from a borrow pit. Add an equipment weight of 35,700 pounds and this king-sized load represents a real traction job. When you consider that the thirty-three tons must be worked over soft, sandy loam — you have a job for super traction!

That's where the B. F. Goodrich Super Traction tire takes over. Notice the wide, deep footprint left by these tires — especially designed for jobs where real pulling power is needed in sand, loam, mud and soft dirt. The deep cleats take a big bite, yet this tire is built *wide* to "float" as it rolls. Designed for drive wheels, it serves equally well on free-rolling wheels in *reversed* position. That's the success story of the BFG Super Traction.

In addition to a longer-wearing tread compound, all B. F. Goodrich off-the-road tires offer you the exclusive protection of a *nylon shock shield* (double in the larger sizes). Layers of nylon cord are built into the tire between the tread and the rayon cord body. This shields the backbone of the tire against shocks and costly bruise breaks.

Such patented protection as the nylon shock shield is yours at no extra cost when the B. F. Goodrich brand is on your off-the-road equipment. There's a specially-designed, deep tread for every job.

See your B. F. Goodrich Dealer. Specify BFG tires for your new equipment. Enjoy the longer service and lower operating overhead offered you by *The B.F.Goodrich Company, Akron, Ohio.*

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 146 JUNE 21, 1951 No. 25

WALDO G. BOWMAN
Editor

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ON the Northwest, the Gooseneck Pullshovel Boom, is a proved unit. Remember, when listening to what you are told about equipment that there is more than *the outward shape* involved in securing final results without "down time" in all types of digging over long periods of time.

Behind the Northwest Pullshovel Design are years of experience. If we were to claim the manufacture of more Pullshovels than all other manufacturers put together we wouldn't miss it by very much! The Lock Joint Pipe Company, who have laid enough pipe and dug enough ditch to encircle the world six times, have practically standardized on Northwests.

No other Pullshovel has such a record of endorsement and experience behind it—and more important, Northwest has combined a group of advantages with proved design to give you a leader whether operating as a Pullshovel, Shovel, Crane or Dragline.

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Give Firestone Tires a trial on your equipment. You'll find that all along the line, trip in and trip out, they speed your work, cut your downtime, and boost your profits.

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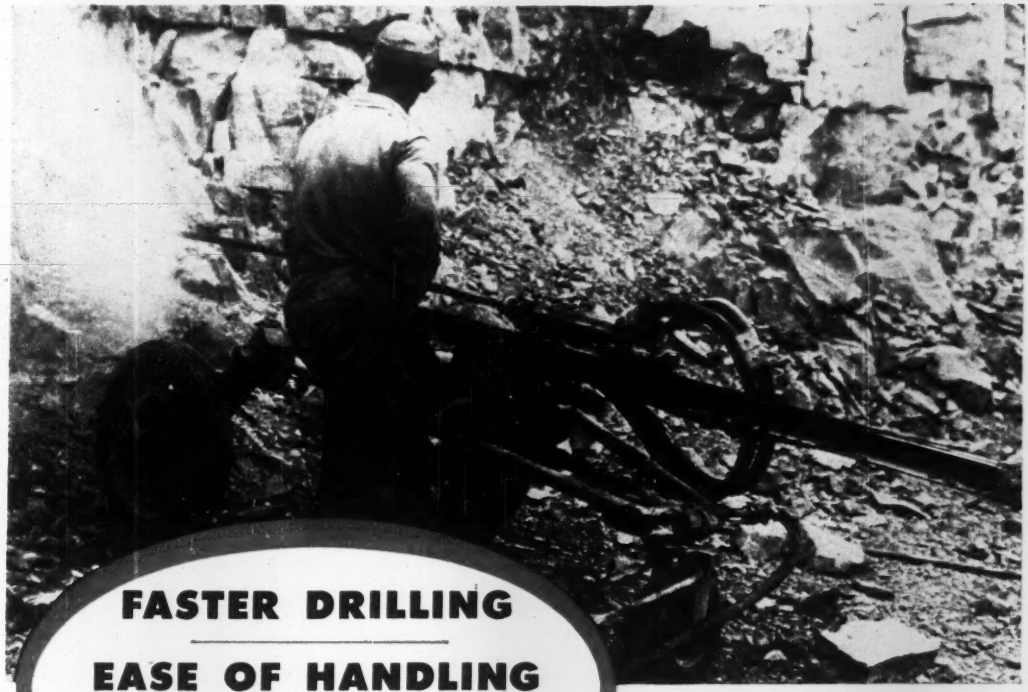

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EASE OF HANDLING

LOW MAINTENANCE

You'll get *more hole* per shift, at lower costs, with the *exclusive* "drill and blow" feature of the JOY Lightweight Wagon Drill. And it's really lightweight—only 750 lbs.—easily operated by one man. Mounts JOY 55 or 65-pound sinkers, and 3" or 3½" drifters, as needed . . . requires no spikes due to the positive locked brakes. JOY pioneered the Lightweight eight years ago—more than 500 now in operation. It can save you time and money—*write for bulletin.*

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Announcing the 1951

Award

of the Concrete Reinforcing Steel Institute to

CARL A. MENZEL

Carl A. Menzel (left) receives the 1951 C. R. S. I. Award from Henry G. Turner, Jr., President of the Turner Construction Company and Chairman of the Award Committee. The presentation was made on April 19, at the 57th Annual Meeting of the C. R. S. I. held at The Homestead, Hot Springs, Virginia.

... in recognition of his contribution to the development of the A305 reinforcing bar

● The Concrete Reinforcing Steel Institute's Award Committee, composed of representatives from *The American Concrete Institute*, *The American Society of Civil Engineers*, and *The Associated General Contractors of America*, has given the 1951 C. R. S. I. Award to Carl A. Menzel.

Mr. Menzel received the Award for his contribution to the development of the new ASTM-A305 deformed reinforcing bar. This bar, which represents the first accepted standard on reinforcing bar deformations, has substantially greater bonding strength than plain or conventional deformed bars. It makes possible less costly, sounder, more permanent reinforced concrete structures requiring less steel. The new bar is now recognized in the revised ACI "Building Code Requirements," and is being rolled by every large producer.

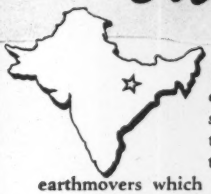
CARL A. MENZEL is well known to the engineering profession for his research and development work in concrete and concrete products. In 1932, he received ASTM's Dudley Medal, and in 1948, ACI's Wason Medal for research in concrete problems. He is also the author of many papers on the subject. Mr. Menzel is a graduate of the University of Illinois.

CONCRETE REINFORCING STEEL INSTITUTE

38 South Dearborn Street, Chicago 3, Illinois

25 LeTourneau Earthmovers "Perform beyond all expectations"

on Saprar Dam



Indian Government engineers are enthusiastically praising the performance of the 25 LeTourneau earthmovers which recently completed a 1,722,000-yd. dam across the Saprar River in northeastern India.

"These units placed the earthwork in record time," reports B. P. Saxena, Superintending Engineer. "It's very good equipment," adds G. L. Sharma, Executive Engineer. "We had little downtime. Performance was beyond all expectations."

9 Tournapulls handle 75% of yardage

All 25 units are owned by the United Province Government at Lucknow. On the Saprar job, their 2 electric-control D Tournapulls and 7 veteran Super C's handled 1,250,000 yds. of clay . . . 6 LP Carryalls moved 417,000 yds. of clay . . . and a rear-dump C Tournarocker hauled 55,000 yds. of rock. Other LeTourneau units assigned to the 60′-high dam included 5 Sheepsfoot Rollers, 2 Rooters, and 2 Cranes.

Tournarocker moves 48 yds. hourly

On rock excavation, the rear-dump Tournarocker, loaded by shovel, carried 16 pay yards per trip . . . completed 3 typical 16,000′ cycles per hour, for a total hourly production of 48 pay yds. In hard, sun-baked clay, each of the 2 high-speed, rubber-tired D Tournapulls self-loaded 5 pay yards per trip . . . each made 10 trips an hour on average 4000′ cycles . . . for a combined hourly output of 100 pay yards.

"All of us prefer and try to get these new electrically-controlled machines when they come on the job," says Operator B. M. Singh. "This is because the operation is simple and there is no fatigue to the operator."

Investigate what these highly efficient, self-propelled scrapers and rear-dump haulers can accomplish in speeding completion and reducing costs on *your* projects. See your LeTourneau Distributor for all the facts.

Shovel-loaded with 16 yds. of rock, Tournarocker completes 16,000′ cycle over rough, hilly, dusty roads in 20 minutes

Electric-control D Tournapull self-loads 5 yds. of sun-baked clay, averages typical 4000′ cycle every 6 minutes.

LETOURNEAU LET EQUIPMENT

R. G. LeTourneau, Inc. PEORIA, ILLINOIS

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

Fred Howland, Inc.—Miami, Florida builder
Adds more success stories to SKIL Drill record!

"We'll use SKIL Drills every time,"

SAYS ARTHUR WILLINGHAM

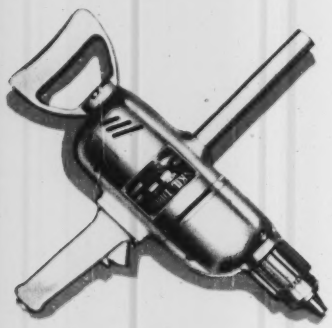
Another on-the-job report of SKIL Drill dependability! Another story to add to the country-wide record of preference built on performance—this time on a department store addition being built by Fred Howland, Inc.

To drill the holes for U-bolts in this concrete roof, Willingham uses his SKIL Drill—heavy duty ⅝" drill—more compact than any drill of comparable power and capacity. The holes are drilled quickly, easily, accurately. When the U-bolts are inserted, they form the anchors for the scaffolding.

And that's where H. C. Lewis, another Howland man, takes over with his SKIL Saw. Another SKIL tool, of course, because all SKIL equipment can be counted on to give tough, versatile, continuous performance.

SKIL tools will give you this dependable, all-around help on your construction jobs. Your nearby SKIL Distributor will give you a demonstration. Call him today.

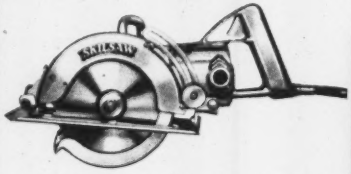
"Easily handled. Powerful." That's the way Arthur Willingham describes SKIL Drills.



SKIL Drill Model 2103

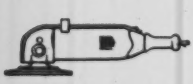
⅜" drill for heavy, continuous duty. Capacity: in steel ⅛" to ⅜"; in hardwood, ⅛" to 1½"; steel reaming, ⅜". No-load speed: 450 r.p.m. Overall length: 16⅛" Weight: 14¼ lbs.

"Plenty of guts for long rips," says H. C. Lewis about the SKIL Saw.



SKIL Saw Model 77—7¼" blade. Cutting capacity: 2⅜" maximum. Bevel cuts 2" dressed lumber at 45°. Full adjustment for depth of cut. Safety telescoping guard. Overall length 17¼". Weight: 15¾ lbs.

SKIL Products are made only by SKILSAW, Inc., 5033 Elston Avenue, Chicago 30, Illinois • *Factory branches in principal cities*
In Canada: Skiltools, Ltd., 66 Portland St., Toronto, Ont.



SKIL Disc Sander

SKIL Belt Sander

SKIL Grinder

SKIL Driver

SKIL PORTABLE TOOLS

NEWS BRIEFS

Scale model helps get school—A scale model built by students had considerable influence on the citizens of Reading, Mass., in voting for construction of a $2,400,000 high school building. It was made by high school juniors and seniors under the direction of Instructor Roderick MacDonald. A plaster model was made of the school grounds about four feet square. The buildings were cut to a scale of one-inch to 25 ft. It was placed on exhibition in the Municipal Building, and viewed by hundreds before the voting.

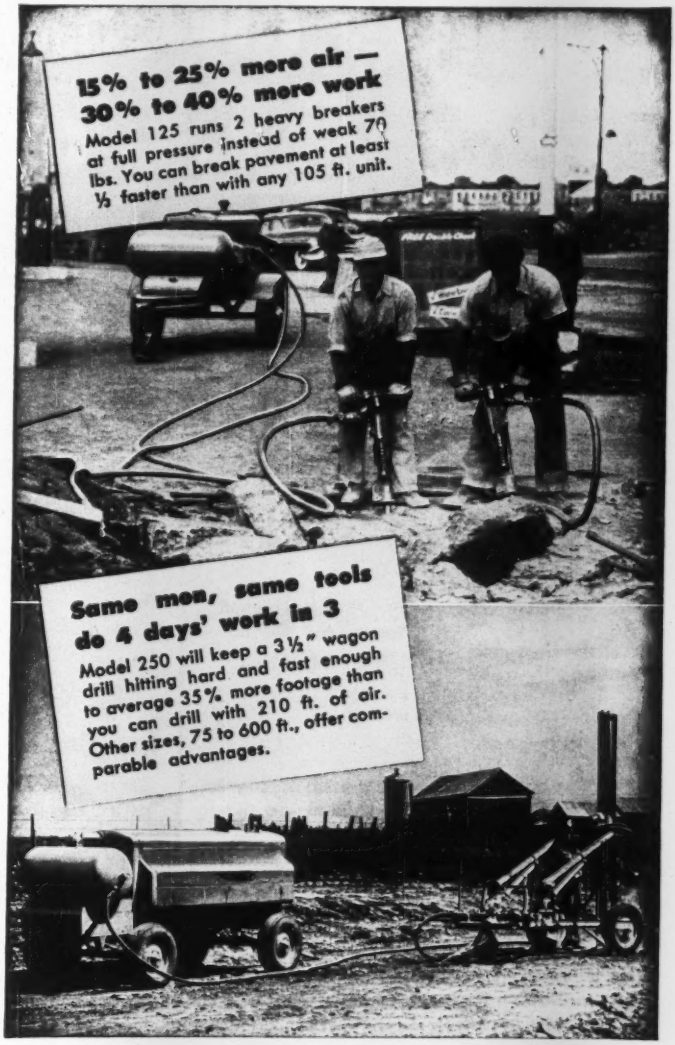
What's in a name?—"Tiger Hole Road" in Duval County, Fla., has been renamed "Hillsdale Road." M. C. Hill, who lives on the road, told the county commission, "I'm fed up with that old name. When I tell anybody where I live, they laugh at me. I had to tell my address to a group of people at my church Sunday and they thought I was joking." Tiger Hole Road is one of the oldest arteries in the county and originally led to Tiger Hole Plantation.

• **A new Old Hickory**—DuPont interests, owners of Old Hickory, the unincorporated company town approximately ten miles from Nashville, Tenn., have offered to donate the facilities of its water distribution system, sewers and sewage disposal plant, together with the fire hall and equipment, to the citizens of Old Hickory for operation under a utility district. This is a part of the over-all plan of the company to dispose of its village properties. The facilities were valued at more than $700,000 nearly a year ago. The plan, now nearing completion, involves improvement and sale of 876 houses to employees, together with development of modern shopping and recreational centers and other business sites. Parcels of land have been donated to the Davidson County Board of Education for school expansion and also to the several church bodies in the community.

Rock experiment—Portland, Ore., district, Corps of Engineers, will conduct tests to determine how fast rocks will move downstream when subjected to swift currents. Various sizes of rock of the type used in bank revetment works will be tested. A site on Row River below Dorena Dam in western Oregon has been selected. There a special revetment channel will be constructed and rocks of various sizes will

(*Continued on page 13*)

"new standard" Jaeger Compressors


15% to 25% more air —
30% to 40% more work
Model 125 runs 2 heavy breakers at full pressure instead of weak 70 lbs. You can break pavement at least ⅓ faster than with any 105 ft. unit.
Same men, same tools do 4 days' work in 3
Model 250 will keep a 3½" wagon drill hitting hard and fast enough to average 35% more footage than you can drill with 210 ft. of air. Other sizes, 75 to 600 ft., offer comparable advantages.

Why starve your modern air tools with "old standard" compressors that have not increased their air output in 19 years? Jaeger Air-Plus standards provide the increased air you need to power today's tools at their full efficiency—*at the lowest cost per foot of air of any compressors on the market.*

See your Jaeger distributor or send for complete Catalog

THE JAEGER MACHINE COMPANY

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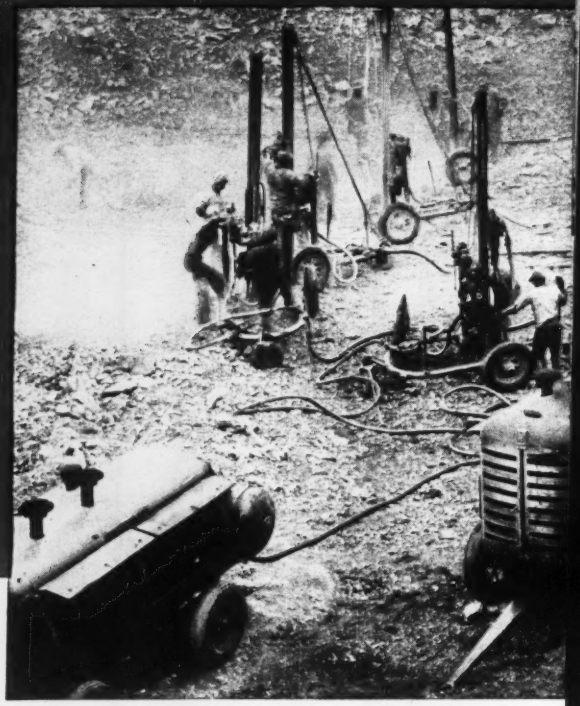
PUMPS • MIXERS • HOISTS • TRUCK MIXERS • PAVING MACHINERY

Better air compressor **ALL** operating

...with TEXACO air compressor oils



Whatever your operating conditions or the size or type of your compressors, there is a Texaco air compressor oil *exactly right* to assure trouble-free and economical performance. For example—

★★ If *rust* is your problem, use a Texaco *rust-inhibited* air compressor oil. It will keep your compressors, intercoolers, aftercoolers, lines and receivers free of rust.

★★ If *carbon and gum formations* are causing trouble, use a Texaco *heavy-duty* air compressor oil with special detergent and oxidation-resistant properties. It will keep compressors clean under severest conditions.

★★ If *moisture is condensing* in cylinders and washing off your lubricant, causing excessive wear, a Texaco *compounded* air compressor oil

TUNE IN...
TEXACO STAR THEATER
starring MILTON BERLE
on television
every Tuesday night.
See newspaper for
time and station.

TEXACO

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performance under conditions...

LONGER DRILL LIFE

For longer drill life and more footage drilled at lower cost, use *Texaco Rock Drill Lubricants EP.* These "extreme pressure" lubricants give full protection against wear and rust under severest conditions.

will overcome the difficulty.

★★ If your concern is merely to assure clean operation and reduce wear under *normal conditions,* a Texaco *straight mineral* air compressor oil will do an excellent job.

A Texaco Lubrication Engineer will gladly help you select the right air compressor oil for your requirements. He'll also be glad to tell you how the Texaco Simplified Lubrication Plan enables you to handle all your major lubrication *with only six Texaco Lubricants.* Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

You're not the only one concerned!

We know you're not the only one *concerned* with the truck mixer you're buying. That's why Rex Moto-Mixers are designed to *satisfy all* those who are *concerned* with *your* purchase. For example:

your operator is concerned...

Your truck mixer operator can be one of your greatest assets—or liabilities. To be a valuable asset he must have a machine that is fast and easy to operate—one that is free from fatiguing vibration—is built with his comfort and safety in mind. A safe, easy operating, smooth running machine keeps him alert and enthusiastic about customer satisfaction.

He'll satisfy your customers and be a valuable asset when you buy REX

your mechanic is concerned...

He knows his job depends on keeping machines rolling. He wants to keep your customers satisfied with *complete* on-time deliveries. He wants a machine that requires least maintenance and repair—that's easy to maintain and repair . . . whose parts are readily accessible.

He'll help satisfy more customers when you buy REX

your customer will benefit!

When you've satisfied all those concerned with the operation of a truck mixer, it's just natural your customer will get better service. He'll have his quality concrete delivered on time, every time. He'll avoid arguments with inspectors and idle crews. He'll save money.

He'll be a satisfied customer when you buy REX

and, you'll benefit...

You know that keeping your customers satisfied is your most valuable asset in your business success. You want a machine that gives you *lowest maintenance cost, least lost operating time, lowest operating cost.* You want the truck mixer that enables you to give your customer the highest quality concrete at the lowest cost and the best possible service.

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CONSTRUCTION MACHINERY

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be placed on either side. Two sizes will be placed on one side of the channel and two smaller sizes on the opposite side. Engineers will release 2,500 cfs of water from the dam into the channel and water velocity will be controlled at 8 to 22 fps. Rock movements under water velocity will be noted and results of the studies will be sent to the Chief of Engineers to be sent to other engineering districts.

• **Postcard election**—At Perrysburg, Ohio, the village council has ordered a postcard poll of all its registered voters to determine whether they prefer that a proposed waterworks system draw its supply from the Maumee River or through a tie-in with the Toledo water system. The latter would have an initial cost of $450,000, compared with an estimated cost of $570,000 for the village's own system, but the operating costs of that system would be only about half as much as in the case of a tie-in with Toledo.

• **A rough Main Street**—After the town had gotten a lot of unfavorable publicity in local and even national publications on account of its main street being very badly in need of repairs for years, the city council of Bellevue, Ohio, has ended almost four years of controversy with the state highway department. It has voted in favor of a consent ordinance to permit the state to build a divided highway along the thoroughfare as part of U. S. Route 20. That had been the bone of contention that caused total suspension of repair work for years, as the city fathers did not want to have 20 ft taken off the curb line, destroying trees, and, it was said, devaluing property, but criticism by motorists and others was hurting the town, too so that what might perhaps be considered the lesser of two alleged evils was chosen.

• **Cave for gas storage**—Further reduction in rates and installation of new gas furnaces at the rate of 3,000 a year would be assured Indianapolis gas users if a vast underground cavern below Marion and Hancock counties, Ind., can be used for the storage of natural gas. This was revealed when the Citizens Gas and Coke Utility filed a friendly suit in Circuit Court to clear up any question as to its right to proceed with the project. The cavern, 1,000 ft below some 7,000 acres of land, is an abandoned natural gas field. It is believed large enough to hold 500,000,000 cu ft of gas. It is estimated that it would cost about $500,000 to put the cavern in operation, while above-ground storage facilities to handle 500,000,000 cu ft of gas might cost $35,000,000.

YOU, TOO, can cut costs with BANTAMS®

for handling pipe

DUNN BROS., Dallas, Texas, recently handled over 380 miles of 12¾" gas pipe at scattered locations with one truck-mounted Bantam . . . unloaded 36 to 42 sections from railroad car in 8 to 10 min. . . . reloaded 8 sections per truck in 8 minutes . . . drove over highway to next unloading site.

for building bridges

HENRY COUNTY, MO. uses mobile Bantam clamshell-pile driver combination for digging bridge foundations, driving piling and pouring concrete . . . has completed 85 small bridges in one year at a saving of 40% over previous methods. Bantam has worked 2400 hrs. without repairs.

SB-C-14

for scattered jobs

M. S. EISENHART, York, Pa., excavates and covers an average of 5 scattered septic tank installations in one day with his truck-mounted Bantam . . . recently completed 40 house basement pits in 7 weeks, averaging *two* 30' x 36' x 5' excavations in 8 hrs. including travel time.

Bantam mobility lets you drive up . . . dig in . . . complete work fast and move on to next job. Write for facts. Schield Bantam Co., 201 Park St., Waverly, Iowa.

for pit excavation

OLAN STRANGE, LeCompte, La., uses fast moving Bantam dragline for working roadside sand and gravel pits . . . averages 800 cu. yds. a day loading into trucks, compared with 110 cu. yds. per day with former small rubber-tired tractor and front end loader. Bantam also digs drainage ditches, spots steel, etc. during spare time.

SCHIELD BANTAM

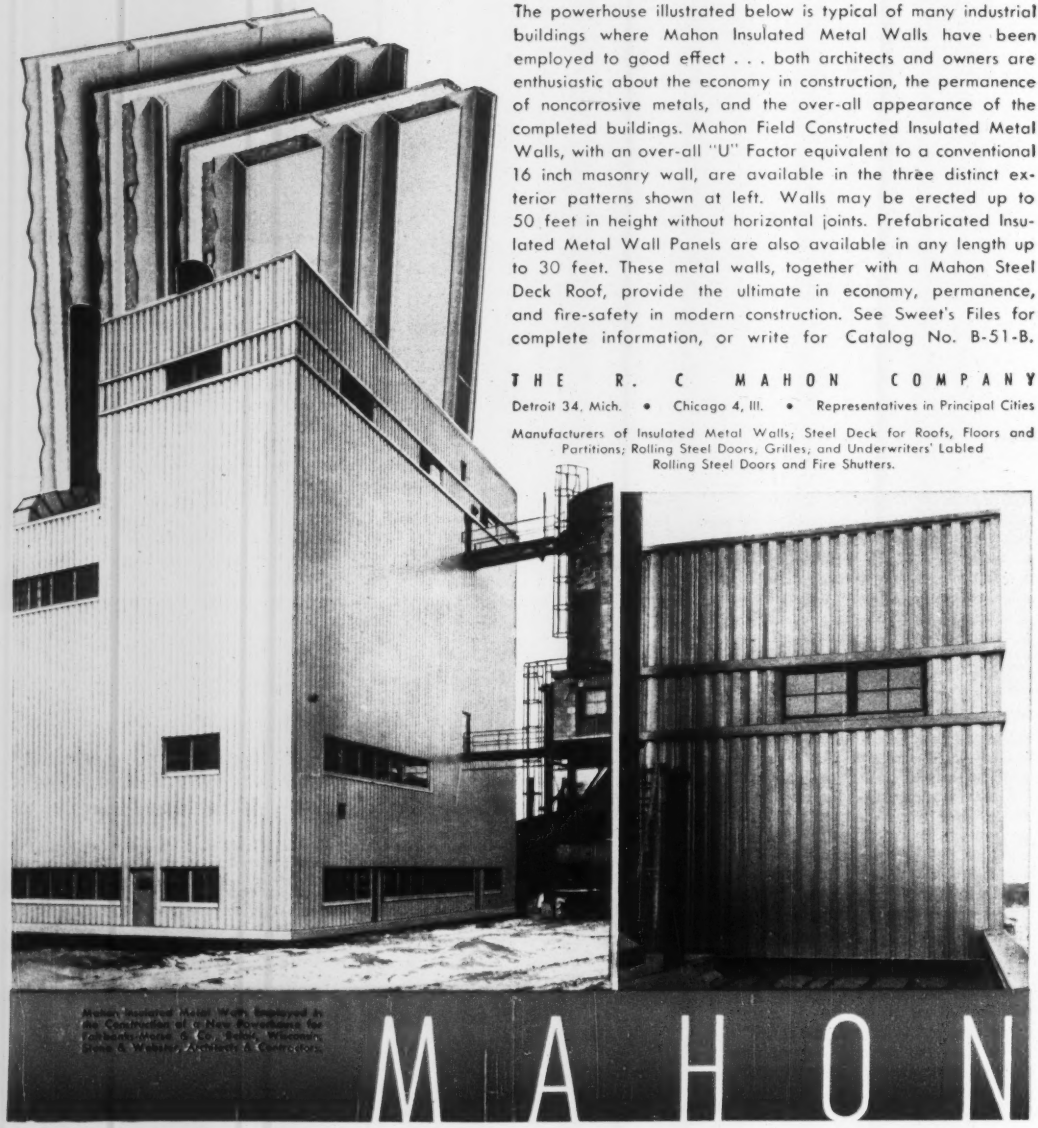
Costs less — goes anywhere fast

GETS MORE JOBS DONE

INSULATED METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

ALUMINUM, STAINLESS or GALVANIZED STEEL



Mahon Insulated Metal Walls Employed in the Construction of New Powerhouse for Fairbanks-Morse & Co., Beloit, Wisconsin. Irving G. Watson, Architect & Contractor.

The powerhouse illustrated below is typical of many industrial buildings where Mahon Insulated Metal Walls have been employed to good effect . . . both architects and owners are enthusiastic about the economy in construction, the permanence of noncorrosive metals, and the over-all appearance of the completed buildings. Mahon Field Constructed Insulated Metal Walls, with an over-all "U" Factor equivalent to a conventional 16 inch masonry wall, are available in the three distinct exterior patterns shown at left. Walls may be erected up to 50 feet in height without horizontal joints. Prefabricated Insulated Metal Wall Panels are also available in any length up to 30 feet. These metal walls, together with a Mahon Steel Deck Roof, provide the ultimate in economy, permanence, and fire-safety in modern construction. See Sweet's Files for complete information, or write for Catalog No. B-51-B.

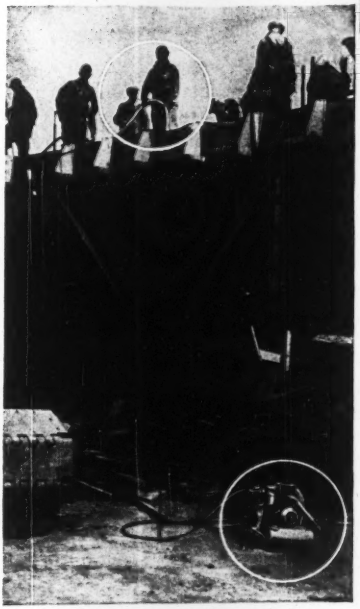
THE R. C MAHON COMPANY

Detroit 34, Mich. • Chicago 4, Ill. • Representatives in Principal Cities

Manufacturers of Insulated Metal Walls; Steel Deck for Roofs, Floors and Partitions; Rolling Steel Doors, Grilles, and Underwriters' Labled Rolling Steel Doors and Fire Shutters.

MAHON

One man can use this VIBRATOR anywhere



Homelite Generator on ground powers vibrators on top of forms.

One man with a CP-Homelite unit, placing concrete as fast as it is delivered, does the work of an ordinary three man crew. Place the Homelite Generator in any convenient location—out of the way of the actual pouring operation—and use the CP-Homelite Electric Vibrator anywhere in a radius of 400 feet.

There's no flexible shaft to give trouble. You can bend the tough electric cable—in its neoprene hose handle—around corners or over forms without injuring it. And the extension hose handle permits working 25 feet down in a form. CP-Homelite Hicycle Vibrators run at a constant speed of 10,000 v.p.m., the most suitable frequency for concrete placement and will handle 30 to 40 cubic yards an hour of 2" slump concrete.

Your Homelite Generator will operate two vibrators and will also power other Hicycle tools, standard Universal Electric tools, and floodlights. Write for full information.

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Pumps • Generators •
Blowers • Chain Saws
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Do you use wire rope? Your nearby Ryerson plant is a convenient source for wire rope of every type, for every application. Hoisting, hauling and guy rope, tiller rope, bright and galvanized, preformed and non-preformed, fiber or wire center rope—all these are available, and many others, in a wide range of sizes and constructions. And you'll get the rope you need *fast* from Ryerson whether you order it by the foot or by the reel.

Our wire rope is made by companies famous for the high quality and dependability of their products. Each Ryerson plant can furnish the rope of one or more of these firms—American Steel & Wire, Bethlehem Steel and Roebling. In addition to the rope you need we can also furnish wire rope slings and all types of rope and sling fittings.

An engineer specializing in wire rope applications will gladly help you select from stocks on hand the right specification for your particular need—or have it custom made for you. So for complete wire rope service, get in touch with your nearby Ryerson plant.

TM ALLOY STEEL CHAIN

Also Available for Prompt Shipment

For heavy-duty work many shops find that "Taylor Made" alloy chain slings last many times longer than dredge iron slings. And this dependable chain is readily available from Ryerson. One reason for its longer life: Its tensile strength of 125-135,000 lbs. after heat treatment is almost 3 times that of dredge iron chain. Another: The stubby, narrow links of TM slings reduce gouging and deforming to a minimum even around sharp corners. And TM alloy chain has twice the safe working load of low carbon or wrought iron chain. Write us for complete data.

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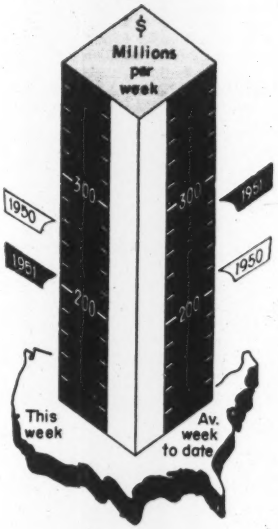
THE CONSTRUCTION WEEK



Contracts by type of work

	Week This	Cumulative 25 wks 1951	1950	chge %
Waterworks	$8.7	$113.3	$114.0	−0.6
Sewerage	5.8	158.0	22.0	+29
Bridges	5.1	141.7	184.9	−23
Highways	27.2	516.1	574.8	−10
Earthwork, Waterways	7.1	267.9	226.8	+18
Buildings:				
Public	37.4	1,080.3	801.2	+35
Housg., pub.	22.1	283.2	114.7	+147
Housg., priv.	17.6	983.1	1,798.6	+45
Commercial	6.3	339.5	432.7	−21
Industrial	27.2	2,274.6	551.2	+313
Unclassified	43.0	808.5	456.6	+77
Total	**207.5**	**6,966.2**	**5,377.5**	**+29**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100	1913	1926	1949
Constr. Cost. June '51	542.68	260.86	113.76
Bldg. Cost. June '51	400.75	216.63	113.92
Volume ..... May '51	501	204	145

(Other business news on p. 81)

NEW URANIUM SOURCE—First details in one of Canada's most secret current projects reveal a uranium development that officials think may be more important than the El Dorado mine at Great Bear Lake—source of most uranium ore in North America. The new area—located and to be developed after five years of exploration by the El Dorado Mining and Refining Co. is around the Arctic Circle, 500 miles north of Saskatoon. Preliminary construction work—including a 13-mi local road and an airstrip—is at present going ahead.

BOOST FOR ROAD BUILDING—National Production Authority's transfer of its M-4 authority for new highway construction to the Bureau of Public Roads is viewed as a real break for construction. NPA made the move to expedite highway construction and repair, in the belief (heartily concurred in by construction men) that BPR can process road construction applications through its district offices far faster than the several months it took to do the job in NPA's labyrinth.

BUT STILL UNCERTAINTY—Despite this cheering transfer, however, the general highway picture is still uncertain. Mobilization boss Wilson hasn't officially changed his "no steel for highways" attitude. But the pundits in Washington are betting that BPR won't turn a deaf ear to requests for highway work for other than direct defense highways and access roads when it comes to a showdown.

TO FLUORIDATE OR NOT TO FLUORIDATE—Despite defeat in the California legislature of a move to fluoridate San Francisco's water supply (because of opposition from groups including the Christian Science Church, which claimed fluoridation was medication) waterworks operators can expect continuing pressure. A meeting of state dental directors at Washington, for instance, had on its agenda consideration of ways to sell fluoridation (for control of tooth decay) to various municipal authorities, civic groups, and engineers.

PLEASE STAY—Long the chief attraction in getting civic workers for Jacksonville, Fla., early retirement privileges are now worrying the city fathers. Many a man—who started as a city worker when he got out of high school in the hope of retiring on a pension and starting his own business before he was 40—is doing just that. So the city is begging them to stay, backs up its plea by offering $10 monthly raises after each five years of service (it used to be $7.50) up to 15 years, $15 a month raises for staying on the job after 20 years, and another $15 a month raise which will be given them after 25 years.

LOVE THAT GARAGE—Turned down once by NPA on its proposal to build a $2,000,000 underground parking garage in St. Mary's Square, San Francisco's Parking Authority is planning to ask NPA to reconsider. (NPA said that since no contract had been let and no materials purchased, it wouldn't let the garage go ahead.) Meanwhile, the city is proceeding with purchase of land and structures on the site.

Saved: $1.44 PER CU. YD. OF CONCRETE

92 Floors and Roof Slabs Concreted in 98 Working Days

●

● New York City Housing Authority plans and builds with a single objective—full value for every dollar—using reinforced concrete frame construction for utmost stability and fire-safety, maximum speed and economy.

General Contractor planned the 12 buildings in Section 2 of Astoria Houses to go up at the same time, but, due to unforeseen foundation conditions, went ahead with six buildings, using 'INCOR' 24-HOUR CEMENT with one set of forms for each building, then re-used these forms on the other six.

Well-engineered forms, designed in the office and built to closest tolerances, were a key factor in streamlined efficiency—erection speed equal to or exceeding that of any other type of frame erection.

First floor poured June 19, 1950 . . . last roof slab of twelfth building on November 1, 1950 . . . *80 floors and 12 roof slabs, 15,000 cu. yds. of concrete, in 98 working days . . . completed before cold weather!*

Dependable 'Incor' early stripping strength kept the job on rapid schedule, saved over 60 days. Result, $1.44 NET saving per cu. yd., over and above the 73¢ a yard extra cost of 'Incor'. Cold-weather saving was another big plus.

'Incor' economy knows no season. Right around the calendar, 'Incor'* promotes smooth-running, time-saving efficiency on which today's close-margin profits depend. Send for illustrated booklet, 'Cutting Concrete Costs'—write Lone Star Cement Corporation, 100 Park Avenue, New York 17.

*Reg. U. S. Pat. Off.

Forms for Astoria Houses, Section 2, designed and engineered in the office and built to closest tolerances, moved up at speed equal to or exceeding that of any other type of construction. Good job planning made fullest use of dependable 'Incor', high early strength. Result, 60 days' earlier completion—NET saving, $1.44 per cu. yd. concrete.

NEW YORK CITY HOUSING AUTHORITY
ASTORIA HOUSES—SECTION TWO
(12 Buildings), Astoria, Queens, New York City

Architects:
HARRISON, ABRAMOVITZ & WIGGINS, New York
Engineers: **SEELYE STEVENSON & VALUE**, New York

Ready-Mix 'Incor' Concrete:
COLONIAL SAND & STONE CO., INC., New York

General Contractors:
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THE ENTIRE CONSTRUCTION FIELD

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

OUTLOOK GOOD FOR STATE AND LOCAL WORK

The future looks bright for state and local construction. Barring total war, physical volume of non-federal public work should equal the 1950 level—and sometimes surpass it—for most of the next five years.

Mobilization will hold activity down in 1952 and early 1953. Controls, increasing costs, financing problems, credit restrictions, shortages of key materials—all will make it harder to get state and local work started and finished in the next two years.

But, barring war, those problems won't last. State and local work should be on the rise some time in 1953. By 1955, it may hit a record level of 15%-20% over 1950—in physical volume, not just inflated dollar figures.

• **Last Year Was Normal**—1950 looked like a boom year for state and local construction. Actually, it was about normal—in relation to the general level of business activity.

Before the war, the U. S. spent an average of 1.8%-2% of the Gross National Product—total output of goods and services—on state and local construction. The war knocked that share down to only .6% in 1940-44, and it was slow coming back after the war. The table shows the past record, and how much state and local work will be if the normal pattern continues after mobilization.

Year	State & Local Construction Expenditures (Billion)	Gross National Product (Billion)	Share of GNP for State and Local Construction (Percent)
1920–39 average	$1.58	$ 82.9	1.9
1940–44 average	.9	159.5	.6
1945–49 average	2.4	234.9	1.0
1950	5.0	279.8	1.8
1951*	5.8	325	1.8
1952*	5.4	340	1.6
1953*	5.7	355	1.6
1954*	6.3	348	1.8
1955*	6.8	343	2.0

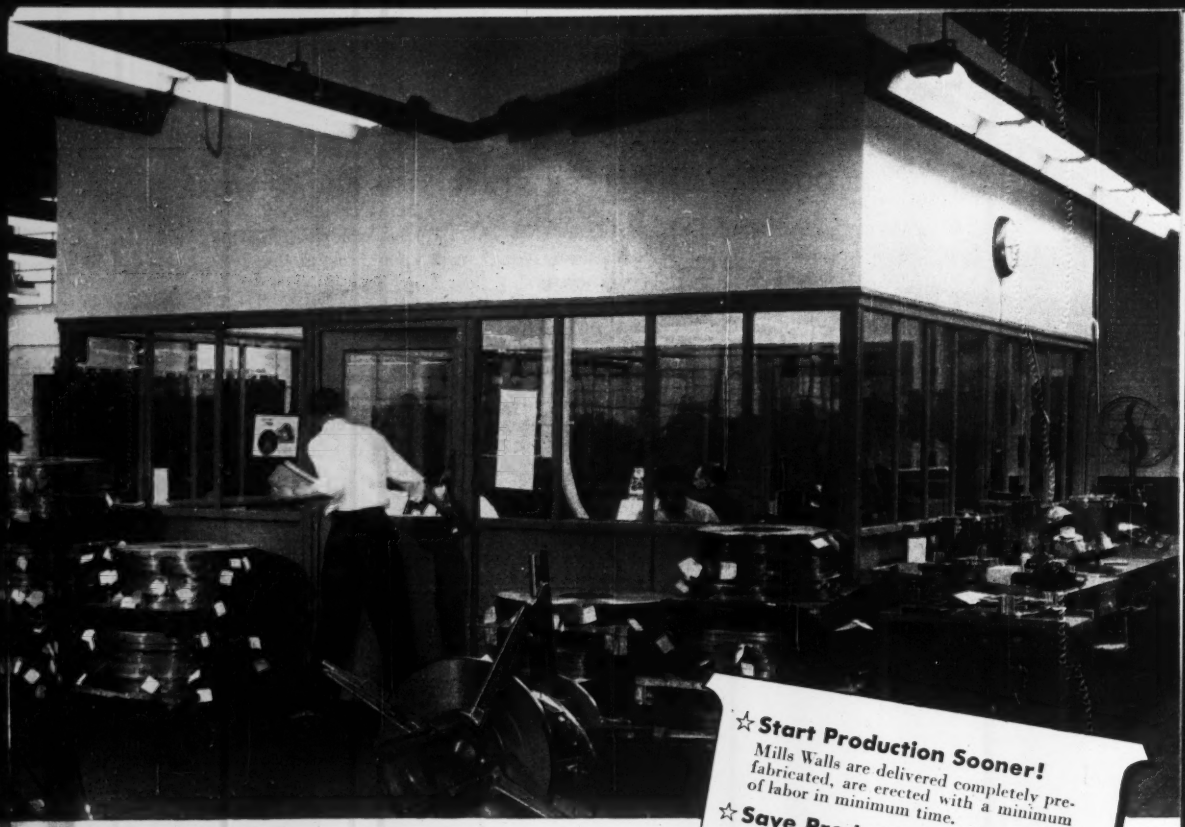
* Estimated in 1951 dollars.

• **Big Backlog**—There is plenty of state and local work to be done. Construction plans of state and municipal governments, as measured by ENR's backlog figures, reached $25.1 billion in May. They grew 8.3% in a year—even though a heavy volume of work moved out of the planning stage into contracts.

Formerly, financing the big backlog would have seemed impossible. But states and municipalities have learned a lot about raising money. Their revenue bonds have proved popular. And in the past ten years high federal taxes have made their tax-free bond issues more attractive than ever. Also gasoline, use, sales and income taxes are increasing sources of revenue that can be used for construction.

Financing can still be a problem for some projects. But, on the whole, anything that's really necessary can be financed one way or another. With the huge need for public work, and lots of methods for getting money, state and local governments should be able to keep building at about the 1950 level—or higher—indefinitely.

(This is one of several *Trends* on state and local construction. Later articles will go into state and municipal problems in more detail.)



MILLS MOVABLE WALLS

speed changeovers

FOR DEFENSE PRODUCTION

☆Start Production Sooner!
Mills Walls are delivered completely pre-fabricated, are erected with a minimum of labor in minimum time.

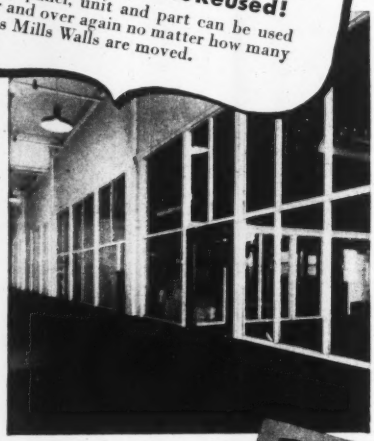
☆Save Production Time!
Mills Walls can be moved overnight to fit changes in factory layout with no interruption of normal production.

☆No Waste—All Parts Reused!
Every panel, unit and part can be used over and over again no matter how many times Mills Walls are moved.

Mills Movable Metal Walls combine total flexibility with structural stability and solid construction. Perfected through more than 30 years of specialized experience, they are made in many different types to meet every plant operating requirement—

- **to create island enclosures and offices for supervisory personnel**
- **to form tool cribs, stock rooms, laboratories, test rooms**
- **to segregate departmental operations**

Mills Walls may be insulated and soundproofed as required. Their baked-on enamel finishes will not check or mar. They require no maintenance except ordinary washing at infrequent intervals.



MILLS *Movable* **METAL WALLS**

For complete information write for Mills Catalog No. 51. Upon request we'll gladly send specific recommendations to meet your particular plant requirements.

THE MILLS COMPANY • 983 WAYSIDE ROAD • CLEVELAND 10, OHIO

Highway detours and good-will

As an economy measure, the Maryland State Roads Commission is considering relaxing its requirement that highway contractors keep the roads they are rebuilding open to traffic. For many years past, the Maryland commission has taken the stand that the public should not be inconvenienced by being required to follow detour routes around construction jobs, except when conditions made that absolutely necessary. Under the plan now being considered, each job is to be studied to determine whether closing the road will produce savings of considerable magnitude.

Maryland's approach to the detour question has been a builder of good-will. Partial abandonment in the interest of economy need not be destructive of that good-will if the public is fully advised as to why it is being done and if the detours are clearly marked. Many highway departments do a good job of starting traffic into a detour, but few do a complete job of marking the entire route, especially at forks and at points where the detour crosses a main highway or street. Nor do they help the motorist by telling him how long the detour is.

Ray F. Smock of the Pennsylvania Highway Department summed up the good-will situation succinctly when he said recently: "We view motorists as stockholders in our organization." If dollars to build more highways are to be saved by requiring motorists to use a detour, then every state highway department can develop good-will by telling them about it. Most of the "stockholders" will welcome that information and will travel detours in a much better frame of mind—provided the detours are well marked from end to end.

How to get better concrete

Buy only the best materials. Use the best techniques in mixing and placing. Have competent inspectors to check the work. These are well recognized principles for obtaining quality concrete. But on how many building jobs are they being applied to the extent designers would like them to be?

Engineers, architects and contractors in New York City think the number is too few. So they have formed an organization—the Concrete Industry Board—to take steps to improve the quality of concrete in the metropolitan area (ENR June 14, p25). Invitations to join are being sent to producers of ready-mix concrete, cement manufacturers and testing laboratories.

According to present plans, the board's main efforts will be directed toward educating all segments of the concrete industry to do a better job. Contractors and producers who maintain high standards will be approved by the board as "qualified." This, ultimately, should give force to the board's recommendations as to methods and practices because the stigma of not being approved could make it difficult for contractors to obtain work or for producers to sell their products.

If the Concrete Industry Board achieves its aims, the way will be opened for designers to turn out more economical buildings. Present building codes make allowances for sloppy workmanship and deviations from code provisions. With improvement in construction practices, safety factors may be reduced and code provisions revised to permit greater economy in concrete construction. In more competitive times, these changes could turn out to be a boon to the concrete industry by encouraging greater use of concrete.

Whether the plan of the Concrete Industry Board is practicable only time will tell. The organization must be financed, and, presumably, most of the money will have to come from the very people whose products and practices will be subject to the board's approval. In other words, the new board will be, in part, a self-policing organization. Success under those circumstances would appear to depend on the number of producers of concrete and concrete products who can be persuaded to contribute to its support right at the start.

Is duplication a cause of shortages?

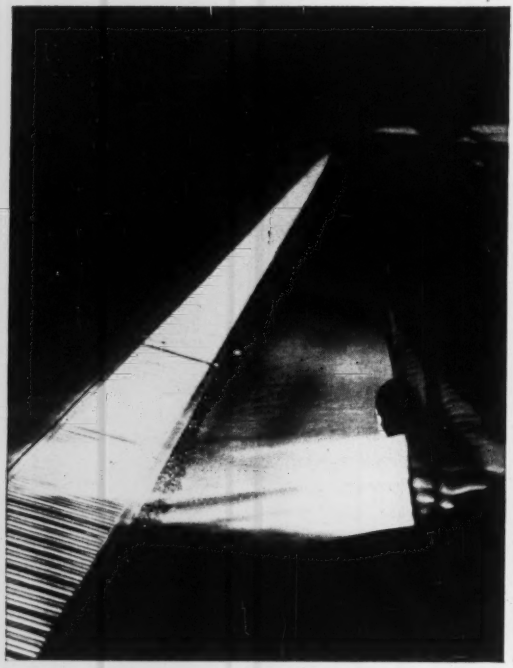
At the dedication of a new hydrodynamics laboratory at Massachusetts Institute of Technology, Karl T. Compton, head of MIT, spoke of the current deficit of engineers. He characterized the shortage as a serious handicap to the current defense program and to research connected with that program. Is it possible that duplication in the research is in part responsible for some of the shortage?

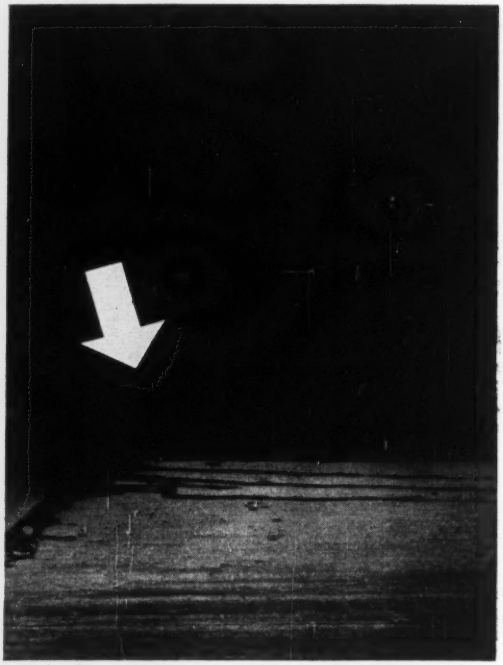
Among the research facilities in the new laboratory is a ship towing tank, which the faculty at MIT believes it needs to aid in teaching naval architecture. Few will doubt that the tank may be a help in educating young naval architects, but in view of the imposing array of Navy "brass" invited to attend the dedication, it is a fair guess that MIT also has an eye on some special research contracts with the Navy, which already has probably the world's finest towing tank.

The same observation can be made concerning the many and much more costly wind tunnels that have been built around this country. Without questioning the need for fundamental research in such fields as supersonic flight, one can still raise question as to the need for making similar studies in several places at one time. Lacking a central clearing house for all federally sponsored research such as the National Science Foundation was supposed to provide, it appears quite probable that there could be considerable duplication of research studies for the military services and some federal agencies.

Which curb would you specify

. . . to alert a night-driver's eyes





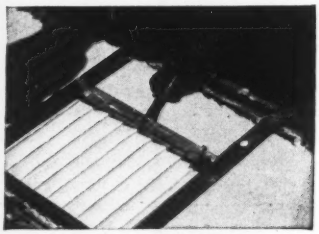
The picture at left shows a corrugated light-reflecting concrete curb made with Atlas White Cement. You can see it is bright and visible in the headlight rays. On a rainy night, the reflection would be even greater, for wetness makes the faces of the corrugations even more mirror-like.

The curb to the right is another story. Its *smooth* grey surface blends visually with the dimness of the roadway and shoulder. When doused with water (to simulate rain-wet; note arrow), it becomes darker, even harder to see.

No wonder safety-conscious engineers are turning to Atlas White Concrete Reflecting Curb. It makes driving safer —day, night, fair weather or foul. And it helps reduce the strain and fatigue of night driving.

Placement of Reflecting Curb is fast and simple. One method is to pour Atlas White Duraplastic* mortar mix on a grey cement base, screed to 1-inch thickness, and score with a hand tool (pictured right). Contractors prefer Duraplastic because its air-entrainment feature makes the mix more workable, more plastic; makes placement and scoring easy.

For more information write: Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS® WHITE CEMENT

For Concrete Reflecting Curb and Markers

ENR-RM-68

NBC SYMPHONY SUMMER CONCERTS—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—June to September*

ENGINEERING NEWS-RECORD

JUNE 21, 1951 VOL. 146 NO. 24

ASCE fosters salary studies to keep profession strong

Other actions at summer convention relate to water policy and civil defense. Technical sessions feature toll roads and Louisville public works

Waldo G. Bowman
Editor

Better pay for engineers is a necessary prop for better structures and assured technical advance. This theme, the subject of the president's address, received further emphasis by action of the Board of Direction of the American Society of Civil Engineers at its summer convention in Louisville, Ky., last week. The board directed that the 1951 report of the committee on salaries (the first since 1946) be published immediately in Civil Engineering and that the budget committee make prompt provision for publication of a manual on "Job Evaluation and Salary Surveys" for which a comprehensive manuscript has virtually been completed.

• **Found wanting**—The new salary survey, based on first quarter data from 121 public and private organizations employing 23,571 engineers of professional grade, combines hourly rates with fringe benefits to give a figure for "total equivalent compensation." Even on this basis, and taking only the middle 50% of the returns, state highway departments pay the lowest grade of professional employee as little as $2,650 per year. Consulting engineers do better (paying $3,377) and contractors best ($3,507), but few have kept up with the cost of living. Similar inadequacies are found in the highest grade where a median salary for the middle 50% of reporting organizations works out at $10,395 for state highway engineers, $15,222 for contractors and $17,147 for consultants.

President Gail A. Hathaway, in commenting on "the increasingly unfavorable economic status of engineers in relation to other professions and trades" pointed out that compensation "in equitable relation to services performed is essential to maintenance of the high level of engineering achievement upon which our national economy and way of life so heavily depends." Because 86% of all civil engineers are in the employee class he urged the society to continue its long-accepted role of "exerting responsible influence to assure that the engineer is fairly compensated."

• **National water policy**—The Board of Direction, in another significant action, supported the objection from the District of Columbia Section and other sources to the wording of part of a paragraph contained in the December, 1950 report of the EJC Water Policy Panel. One of the EJC task committees had recommended that the Board of Impartial Analysis be set up so as not to contain anyone "assigned from, or within the preceding five years an employee of any federal agency or a person who has for more than five years been an employee of any federal agency."

Federal employees took this as a slur on their integrity and patriotism, and the ASCE board conceded that the language was objectionable. It voted to recommend to the EJC Water Policy Panel that the language of the report be changed to a statement carrying the following meaning: "Each member of the Board of Impartial Analysis shall affirm that he is in a position to exercise free and independent judgment uninfluenced by any past or present association, engagement or affiliation."

• **Other actions**—National policies on questions other than water also received attention.

The joint AGC-ASCE committee was asked to investigate the possibility of reconstituting the dissolved Construction Advisory Board to NPA as well as the desirability of the appointment of regional advisory boards.

Local sections were asked to give attention to civil defense.

(*Continued on page 24*)

N.Y. again disturbs resources group

Gov. Thomas E. Dewey and his New York State representative stole the show last week in Albany at the third meeting of the New England-New York Inter-Agency Committee:

Dewey by asserting that the eastern half of the U. S. is paying 75 to 80% of the cost of hydro power development in the West. John E. Burton, chairman of the New York State Power Authority and NENYIAC representative, by calling power the only real concern of New York in the group's affairs and asking to be excluded from all other discussions.

The committee was set up by President Truman (ENR Nov. 16, 1950, p. 24) to investigate all resources of the seven-state region—minerals, fish, wildlife, soils, and forests included. Mr. Burton's assertion that he considered all interests except power just so much "window-dressing" caused obvious anguish among the committeemen. His statements read at a previous meeting in Hartford, Conn., had caused similar concern (ENR Apr. 12, p. 136).

Positive statements by Mr. Burton favored (1) a change in New York's power law that would permit export of power across state lines and (2) an interstate compact for allocation of power from Niagara and the St. Lawrence. He would include Ohio, Pennsylvania and New Jersey in this; New York, he said, has already completed preliminary work on such a compact.

Donald Ripley, a representative of Canada sitting in on the meeting, claimed Canada is not bluffing about going ahead alone with St. Lawrence Seaway plans if the U. S. fails to act.

[Under provisions of the International Boundary Waters Treaty of 1909 neither country can make any change in flow conditions in any one of the boundary streams without approval of the changes by the international joint commission set up under the treaty. That would appear to bar unilateral action by Canada—Editors.]

It had been expected that the committee's work might further be extended by a request that New York city's water supply also be included in its studies. But no mention was made of this.

Prepared discussions of recreation, public health, insect control and agriculture were heard. Col. Frederick F. Frech, Corps of Engineers representative and committee chairman, presided.

J & L. files suit against F. H. McGraw

Jones & Laughlin Steel Corporation has filed suit against F. H. McGraw Co. in federal court. Damages in amount of $3,301,375 are claimed.

The nation's fourth largest steel producer alleged that a coal-washing plant built by McGraw was "unsound, inadequate and defective."

Original contract for the construction and design of the plant in East Fredericktown, Pa., on the Monongahela River specified a completion date of July 1, 1949, it was alleged. In September of 1950 construction of the plant was taken over by Jones & Laughlin engineers who completed the job.

The claim against the contractors is broken down into two parts, around $1,000,000 for the cost of completing the job, and $2,000,000 to cover losses claimed from delays.

The plant was to size, clean and separate 2,000 tons of coal per hour. A 1,000 ft suspension bridge was planned to bring belt-conveyed coal from mine to plant.

Vote $50 million bonds for Chicago schools

Chicago and Cook County, Ill., on June 4 voted eight of nine bond issues for public improvements, totalling $81,800,000. All of the successful proposals received heavy majorities.

The proposal that lost, by 5,000 votes, called for the expenditure of $3,200,000 for the remodeling of the County Building. A $50,000,000 bond issue for the Board of Education was the largest loan authorized by Chicagoans. The funds are to be used to construct 22 new elementary schools and 18 temporary schools, a school for handicapped children, additions to 19 elementary schools, three new high schools, additions to four others and new buildings for three trade schools.

The city voted four bond issues of:

$8,000,000 for four bridges. City officials have not announced yet which bridges will be replaced.

$8,000,000 for street lights;

$2,000,000 for police and fire stations; and

$2,000,000 for an experimental garbage incinerating plant.

Other bond issues approved by voters in the city and throughout the county were for: $6,600,000 for rehabilitating Cook County Hospital; $4,200,000 for remodeling and repairing Oak Forest Infirmary; $700,000 for improving the juvenile home; and $300,000 for repairs to the Criminal Court and jail building.

ASCE . . . .

Toll roads called traffic necessity

Our new toll roads are the natural result of our inability to build certain highways any other way, Enoch R. Needles of the consulting firm of Howard, Needles, Tammen & Bergendoff told a session of the American Society of Civil Engineers convention in Louisville last week.

The Pennsylvania Turnpike, the Maine Turnpike and the New Jersey Turnpike were cited as examples of roads that tax revenues could not handle promptly enough if at all. Each has had to be economically justified under the objective eye of realistic bankers and insurance companies, a powerful safeguard against the unbridled expansion of the toll road idea, in Mr. Needles opinion.

The Maine Turnpike, even though it parallels US Route 1, one of the most heavily traveled "free" roads in the country, is enjoying earnings beyond the most optimistic estimates. Moreover, Mr. Needles pointed out, because of the existence of the turnpike, Route 1 is handling local traffic better, and is a much safer highway than it formerly was.

These views met no opposition among any of the other members of a panel which discussed the economic justification of toll roads. Those taking part were Farley Gannett, consultant of Harrisburg, Pa.; Charles O. Smith, turnpike engineer, Ohio highway department; J. Burch McMorran, New York State Department of Public Works; Ben H. Petty, professor of highway engineering, Purdue University; and Lawrence S. Waterbury of the consulting firm of Parsons Brinckerhoff, Hall and MacDonald, New York.

All agreed that toll roads in certain locations are absolutely necessary for traffic relief, and all agreed that those roads that can be economically justified should be built as a means of permitting other highway funds to be used more effectively on the so-called free road system.

• **Note of caution**—The only warning note was sounded by Prof. Petty who wondered "what the highway departments will inherit when the toll road bonds paid off and a turnpike becomes the state's baby." Will it be a worn-out pavement requiring costly rehabilitation, or can toll revenues keep maintenance up to a high standard so that the inheritance will not be a burden?

Prof. Petty, however, saw no reason to oppose the trend toward toll roads where justified economically. He hoped that they would be limited to actual needs "so that the existing system and the orderly planning and construction of new highways will not be unduly hampered or jeopardized."

Each of the panel members brought out information based on his own particular experience with modern toll roads. Some quotes:

Mr. Gannett: There are about 600 miles of toll roads and some 700 miles more are being studied. . . The present $9 million earnings of the Pennsylvania Turnpike cover the bond interest seven times. If it should be deemed desirable to promote the building of toll roads, two financing aids are worth considering: (1) Have the Federal government participate by taking a second mortgage up to perhaps 25% of the cost; (2) Apply the gas tax revenues generated by a particular turnpike to the interest and amortization fund of that turnpike. . . One of the thorny problems created by the new turnpikes relates to facilities to handle traffic at the entrances and exits; such connections to the existing free road system are apt to become large items in the states' budgets.

Mr. McMorran: Concessions can help pay the cost of turnpike operation. They bring in $360,000 a year on the Pennsylvania Turnpike whose toll collection charges, for example, cost only $240,000. . . New York's Thruway was planned as a free road, but had to be studied as a toll facility when it was found that its cost would siphon too great a share of the state's tax money, and its construction could not be completed promptly enough. . . In the next November elections citizens of New York state will be asked to permit the Thruway bonds to be backed by the credit of the state as a result.

Mr. Smith: Ohio is studying across-state toll road to connect with the Pennsylvania Turnpike. . . Ohio is not in favor of toll roads, but had had to admit their necessity—there won't be enough money available in 25 years from ordinary sources to build the necessary cross-state road. . . Courts have recently established the legality of toll roads in Ohio so that financing is now planned for this fall. . . Studies for the Ohio toll turnpike include the possibility of operating the roadways in the opposite directions from those conventionally followed. This would put the slow lanes on the inside next to the dividing strip, which would be made wide enough to accommodate turnouts, intersection facilities and such services as gas and repair stations.

Louisville bares traffic, sewage plans

Having grown up since the war to be largest industrial city south of the Ohio River in point of workers employed, Louisville's problems with traffic, sanitation and water supply have likewise increased—and in some particulars become critical.

What is being done—or not being done in some instances—was told in a group of papers scattered through the three-day technical program of the ASCE convention in Louisville last week.

• **Expressways planned** — Louisville's traffic problem is both caused and complicated by the fact that the city is served by (8) trunk line railroads and two terminal railroads as well as being a convergence point for (5) regional highways. Charles E. De Leuw, consulting engineer of Chicago, was hired by the city's railroad planning commission to report on the question of grade separations and a union terminal. He described how his studies soon encompassed the expressway idea.

For example, by considering the railway and highway problems together, the number of needed grade separation structures was reduced from 110 to 40. Taking up the problems together also resulted in general agreement that the railroads should shoulder only 15% of the grade separation cost and that the financing of a union passenger terminal would be handled by the city through revenue bonds.

With the pattern set, the citizens approved last November the issuance of $4 million in bonds for the expressways, $2.85 million as the city's share of railroad grade separations and $5 million for other street improvements.

Using matching funds from various sources, it is estimated that Louisville can carry out a $30 million program of traffic relief. What happens to the plans for a union passenger terminal is still in doubt, except that they are apt to be postponed for some time. The railroads definitely are not interested.

• **Usual and unusual**—The expressways as planned will follow the usual pattern of radiating from the central business area. There will also be two cross-town routes. Only one of the expressways will be a unusual character. This will be an eastward route paralleling Frankfort Ave. (The present main artery in that direction) and will be placed in a cut along with a relocation of the mainline L & N tracks. A total of 22 grade crossings will be eliminated by this improvement, which will include (5) vehicle and (3) pedestrian bridges across the railroad-expressway cut.

In order of building, a north-south route across the city connecting with the Ohio River bridge will probably be first, according to Mr. De Leuw. This will be followed by a cross-town line, and then a southeast line will be built.

Special urgency has recently attached to this last route because of the plans of the General Electric Co. to build a jet-engine plant out in that direction. It will employ 16,000 workers, and will later be converted to some such peacetime product as electric refrigerators.

• **Increased street capacity**—Expressways are not enough nor can they be built soon enough, so that Louisville has undertaken a major program for increasing its street capacities. As outlined by George W. Barton, of Associated Consultants of Evanston, Ill., this has involved short extensions to make existing streets continuous, adding 6 ft to 17 miles of streets so that (4) lanes are now 42 ft wide instead of 36 ft; removing crowns and leveling out intersections; and placing all traffic lights in a coordinated system except for a few which were converted to the traffic-actuated type. Designations of many streets as one-way thoroughfares has also helped to increase traffic capacity.

• **Sewage treatment**—Companion in seriousness to the traffic problem in Louisville is the polluted condition of the Ohio River, from which the city takes its drinking water. As other cities upstream clean up their sections of the river, Louisville's moral obligation to do likewise increases.

But equally compelling is the growing possibility that the Ohio River Valley Water Sanitation Commission may invoke its powers to require that sewage and industrial waste pollution cease.

Edward J. Cleary, executive director and chief engineer of the commission, implied such a possibility in a paper recounting the progress being made in aiding cities and industries along the Ohio in pollution abatement. For example, the setting of water quality standards for the river near Cincinnati has enabled 16 Kentucky cities to go ahead with the construction of a collector system and the city of Cincinnati to begin work on a major treatment plant.

Industry-action committees have been set up in the steel, distilling and other industries to promote quality standards and treatment methods for wastes now discharged into the river. Mr. Cleary characterized these committees as a new force in advancing pollution abatement efforts.

• **Research**—The commission is sponsoring research in phenol removal, and is beginning a study of the chronic effects as distinct from the better known lethal effects of certain substances. Only this week it is publishing a final report of bacterial quality objectives for the Ohio River to guide in the establishment of treatment requirements for discharged sewage and to serve as a yardstick for evaluating sanitary conditions in river water used for drinking and recreational purposes.

All these developments give cities such as Louisville something definite to work toward as well as emphasize the urgency with which Ohio River cleanup is being imbued.

L. S. Vance, technical advisor, Louisville and Jefferson County Metropolitan Sewer District, reflected this new attitude in describing what is being done. Louisville's old sewers are being rebuilt and connected into a new system of interceptors that will lead to a 95 mgd primary treatment plant on the river in the southwest part of the city.

More farm-to-market roads are planned by Texas

The Texas Highway Department has announced a $29,000,000, two-year program of farm-to-market roads, which it will build if materials are available.

A 2,500-mile construction program is planned for secondary roads in most counties of the state. Last year, over 4,000 miles of farm-to-market highways were improved. The 1952-1953 list would extend to 18,500 miles the total of all-weather farm-to-market roads in Texas.

Last year, the highway department divided with county commissioners' courts a $14,600,000 surplus in the road bond payment account—which is financed by gasoline taxes. The legislature this year "froze" the amount going to county officials for spending at $7,300,000 a year and earmarked the remainder for the highway department to use in "construction and improvement" of secondary roads.

Since the bond fund surplus increases annually, the highway department expects to get $9,000,000 from that source in 1951 (compared with $7,300,000 in 1950), and to get additional money in the future. Texas also has $15,000,000 a year appropriated from the general treasury fund for farm-to-market roads.

Concrete going in at Lookout Point Dam

Mass concrete pouring is under way at Lookout Point Dam on the middle fork of the Willamette River, 22 mi. southeast of Eugene, Ore. (ENR Apr. 27, 1950, P. 29). Recently, a 2,600-ft high line suspended over the dam site carried the first bucketful of concrete to its place.

Earlier, trucks were used to haul concrete from the mixing plant to the dam foundation, but this was only preliminary work. The high line, suspended from a 428-ft tail tower over the mixing plant on the south side of the river to a 160-ft head tower mounted upon tracks high on the opposite side, will speed up operations.

The principal steel cable in the line has a dia of 3¼ in and is capable of handling 77,000 lb. The bucket in which the concrete is transported has two four-yd sections, so that two batches of different mix can be handled on one trip. When running at full operation, it is planned to transport the bucket at three-minute intervals.

• **May speed up**—Lookout Point Dam, largest unit in the Willamette Basin flood control, power, irrigation and navigation project (ENR Aug. 23, 1945, P. 216), is expected to cost $74,800,000, according to an Army Engineers' estimate. It is scheduled for completion in 1954, but Brig. Gen. O. E. Walsh of the Corps of Engineers, speaking at ceremonies attending the start of concrete pouring, said federal authorities may order the project completed ahead of time.

Lookout Point will be an earth-fill dam with a gravity-type concrete spillway. Its overall length is 3,370 ft. The concrete section will be 1,390-ft long and will rise 273 ft above its foundation, with a spillway 248-ft wide. The fill section will taper upward from a maximum base width of 1,130 ft to crest width of 24 ft. Its height from base to crest will be 256 ft. The reservoir will be 14.2 mi. long and will cover 4,360 acres.

• **Second dam**—While designed primarily for flood control, a powerhouse at the site will house three generators with total installed capacity of 115,000 kw. A secondary re-regulating dam, known as Dexter, a few miles downstream from Lookout Point, will provide an additional 15,000 kw of electric power.

Tunnel lighting improved in Seattle modification

Light intensity at roadway level in a Seattle tunnel now is 3½ ft-candles instead of one-third ft-candle, as the result of a modification contract recently completed.

Installation took place in the twin tunnels that provide the city's approach to the Lake Washington floating bridge. Lights have 40-ft longitudinal spacing on the arch, staggered 5 ft right and left of the centerline.

At night the illumination is 3½ ft-candles throughout. For daytime operation, lights at portals give 100 ft-candles, tapering off to 3½ ft-candles inside. This tapering enables daytime motorists to make the transition to comparative darkness without momentary blindness. Extra (daytime) portal lights are operated by relays controlled by a photoelectric cell turning those lights off and on.

This installation replaces a sodium-vapor system that put 0.35 ft-candles on the roadway, with extra lights to provide 10 ft-candles in daytime at the portals. Most of the sodium vapor illumination was along the ceiling.

This job is part of a $4,000,000 city street-lighting program designed to give Seattle the greatest mileage of lighted streets per capita of any U. S. city.

Connecticut orders new sewage treatment plants

The Connecticut State Water Commission last week had ordered four more communities to build sewage treatment plants to reduce pollution in four rivers.

Orders went out to the cities of Norwich, Ansonia, Derby and Shelton which (said the commission's order) dump a total of 9.4 mgd of untreated sewage into the Naugatuck, Housatonic, Niantic and Thames rivers.

Precast slabs solve bridge repair headache

Faced with the problem of resurfacing many timber bridges, the Florida State Road Department believes it has found an economical solution in precast concrete slabs 3 ft wide and 4 in. thick. Length generally equals half the width of the roadway, about 11 ft.

In resurfacing a structure with a wornout deck, maintenance workers first remove the old decking and insert new 6x12-in. timber stringers (five for a 2-lane bridge). Then, the precast slabs are laid over the stringers. Finally, they are fastened in place by bolting to 4x8-in. hold-down timbers placed under the stringers. Three ⅞-in. bolts are used per slab.

Private power construction may amount to $1.5 billion

Spokesmen for the privately-owned electric light and power companies, meeting at the annual convention of the Edison Electrical Institute in Denver recently, estimated that expansion in their power industry within the next few years will mean construction business worth roughly $1.5 billion.

L. V. Sutton, president of the institute, in a talk at the convention said that the power companies operated by private enterprise face an urgent expansion program which may cost in the neighborhood of $15 billion during the next three years. This total represents all costs involved in the program.

Perhaps a more realistic yardstick for physical needs is one used by the industry's engineers. They estimate that the private companies should plan expansion to provide an additional 27 million kw—to keep step with mounting demands both for domestic and mobilization purposes.

Working on the basis of known earlier costs, and adding a percentage believed to represent the rise in costs within the past year, industry spokesmen feel that construction of new generation facilities, switch gear yards and transmission lines will cost approximately $170 per kw.

Their "horseback guess" is that one-third of the $170 would be spent on construction. This figure would include the cost of structure for an entire station. Not included would be the cost of land, clearing of ground, construction of switchgear yards and transmission lines.

Their approach to a true cost-of-building figure comes from a recent survey, made in connection with estimating the probable cost of atomic power plants, which shows that about 26% of the total cost of coal-burning electric power plants built since 1949 has gone for building. Increases in costs of materials and labor will bring future expansion costs to approximately 33⅓%.

S. C. schools to be built regardless of court outcome

Gov. James F. Byrnes of South Carolina says that construction will go forward in the state's ambitious $75-million school building program—regardless of the forthcoming decision of a federal court that has been asked by a group of citizens to declare separation of white and Negro pupils illegal. Byrnes says that even if the courts rule against segregation, the proposed buildings will be used in some way.

New locks begin handling Monongahela River traffic

A new lock chamber for Lock No. 2 on the Monongahela River at Braddock, Pa. (metropolitan Pittsburgh), began handling river traffic early this month. It is the first half of a modernization program under way at Dam No. 2, which creates a 12½-mile pool through one of the busy industrial centers of Pittsburgh (ENR Oct. 19, 1950, p. 34).

Built by the Contracting Division of the Dravo Corp., Pittsburgh, and costing $7,263,000, the new lock chamber is on the river side of the Lock No. 2. It is 360 ft long and 56 ft wide.

Second-phase construction will be the building of a landward lock chamber by the same contractor, measuring 720 ft long and 110 ft wide. This contract is for $8,137,000. Like the chamber just completed, the second chamber will have lock mechanisms powered by hydraulic oil pressure and equipped with latest devices.

The lock chamber just completed incorporates a special feature—an emergency dam, or floodway bulkhead, supported on an arch immediately upstream from the upper lock gates.

This bulkhead will be lowered in an emergency, or during repairs, to prevent draining of the pool above. During periods of high water, the bulkhead will be lowered while the miter gates are opened, then raised again to provide an additional channel for passage of flood waters. Construction awards and supervision are by the Pittsburgh District, Corps of Engineers.

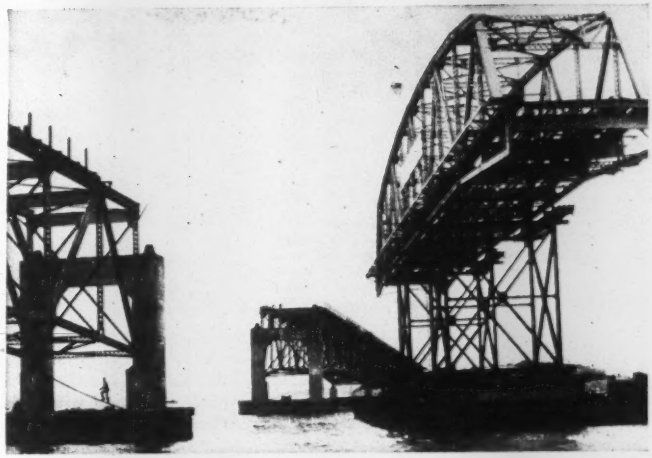
Replacement work begins on Three Rivers Bridge

Contract for a new bridge structure at Three Rivers, Que., to replace the Duplessis Bridge, part of which dropped into the icy St. Maurice River last January (ENR Feb. 8, p. 23), is reported. The award is said to have gone to Dominion Bridge Co., Ltd., of Lachine, builders of the old bridge.

It is expected that work will start as soon as the west channel of the St. Maurice is cleared of debris—probably later this summer. Construction plans have been prepared by the Quebec Dept. of Public Works and a special authorization for the steel required is anticipated from the government.

The Foundation Company of Canada, Montreal, is contractor to clear the four fallen spans.

Bailey bridges, constructed by the Dominion Bridge Co. to provide temporary crossings near the main bridge, have been opened to traffic.



CENTER SPAN ARRIVES—An ebb tide was employed to lower into place the 250-ft center span of the $2.6-million bridge under construction between Squantum and Long Island in Boston Harbor (ENR Mar. 1, p. 29). Span was assembled on two barges about four miles away, was brought into position and held there by tugs until the lowering water brought the structure to rest on the center bridge piers, where it was secured. General contractor is Merritt, Chapman & Scott; Bethlehem Steel Co. fabricated and erected the steel. (Wide World photo)

Wash., Ore. pollution control pays off

Puget Sound, upon whose shores the bulk of the population of western Washington lives, has less pollution than it had three years ago—according to E. F. Eldridge, director and chief engineer of the Washington State Pollution Control Commission.

Had pollution been permitted to go unabated, says Eldridge, it might have destroyed the Sound's $25-million commercial fishing industry, sports fishing and many other recreational activities perhaps equal in value.

In the three years past, 17 communities on Puget Sound built sewage treatment facilities at a cost exceeding $2 million. Plants costing another $2 million are at present under construction.

• **Industry too**—Industry has cooperated and some of the largest manufacturers have received special commendation from Director Eldridge for their efforts. Companies now are treating cyanide and other wastes formerly dumped into the Duwamish River; sulphite waste liquor that virtually had destroyed the oyster industry is being impounded.

Pulp liquor from a large wood processing plant at Everett is carried far out from shore by a $600,000 pipeline to prevent harm to salmon on their way up the Snohomish River.

Domestic waste continues to be a problem at many points. Numerous sewage outfalls feed into the Sound. But some treatment facilities are being installed.

• **Progress in Oregon**—Oregon's State Sanitary Commission, which last year issued a "clean up or close up" order to paper and pulp industry, gave indications recently of relaxed pressure against these manufacturers.

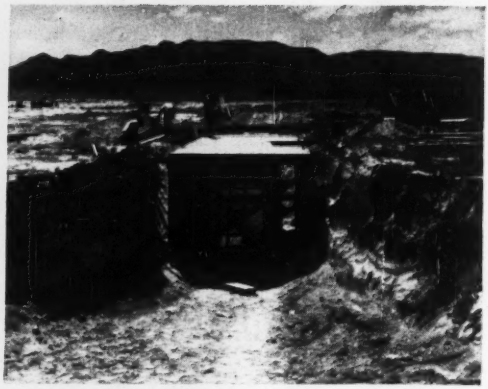
These indications came after the commission received reports that five pulp and paper mills in the Willamette Valley had made progress in beating stream pollution.

These reports indicate that the Willamette River and its tributaries may be free of waste sulphite liquors during the low-water period of 1952.

• **Lagoons**—Solution of the problem, paper manufacturers agree, seems to lie in creation of large lagoons in which to store waste liquors during low-water periods, then releasing them gradually during high-water seasons, when the flow is sufficient to prevent accompanying destruction of marine life.

The main problem in this method is the lining of the lagoons to prevent seepage. Warren Staton, of Oregon State College, School of Engineering, has been conducting tests at Publishers Pulp & Paper Co's Oregon City plant. His experiments, he reported, would indicate whether an asphaltic membrane with a thickness of as little as 3/8 in would be sufficient to hold the waste liquors.

UNDERGROUND TARGETS are constructed by Morrison-Knudsen crews. Specifications on structures are not revealed.



INSTRUMENT TRAILER of Stanford Research Institute is buried 1,500 ft from blast site. Cables lead to surface targets.

MILES OF CABLES connect underground instruments with recording equipment in trailers and trucks at safe distances from the blast. Data are kept confidential.

IN CHARGE of preparations (L. to R.): L. E. Christensen, J. C. Coombs, Capt. R. M. Wagoner, Jr., F. W. McGregor, all from Corps of Engineers.

Super blast tests sub-surface structures

Army and civilian technicians blew a gaping crater in the dry desert clay at Dugway Proving Grounds, Utah, May 22, in quest of basic information on the effects of sub-surface explosions on typical military and civilian structures.

TNT—320,000 lb of it—buried in the bed of prehistoric Lake Bonneville at an unrevealed depth, was touched off in the blast. Corps of Engineers spokesmen estimated the resultant force to be the equivalent of 16 of the largest block-buster bombs, or about one-fifth the force of an "old style" atomic bomb.

The blast was one of the largest controlled non-atomic explosion on record. It was directed against underground targets simulating bomb shelters and underground factories—and against reinforced concrete facsimiles of bridge abutments and building foundations. (Another big blast, for another purpose, was TVA's shot of 1,363,000 lb of Nitramon in 1949, see ENR Sept. 15, 1949, p. 45).

• **For security reasons**—Details of the soil under test and descriptions of gages and the instrumentation utilized are not being released by the Army engineers, for reasons of security. Also under wraps are descriptions of the targets, placement distances and results observed.

Henderson E. McGee, Deputy Chief, Engineering Division for Military Construction, Corps of Army Engineers, Sacramento, Calif., noted that the Dugway test in dry clay should provide valuable data for defense purposes. He stated that this test, and subsequent tests in wet clay, dry sand, limestone, granite and sandstone, should provide data heretofore unavailable on the effects missiles may be expected to have on public installations and buildings. Studies of shock waves should provide bomb damage data.

Another corps spokesman said: "The purpose of the present tests is to establish design criteria of sub-surface structures and tunnels to resist the underground explosions produced by

STACKED WITH CARE are the 160 tons of TNT inside the charge hole. Timber framing insures tight, scientific packing.

EARTH IS TAMPED over TNT in charge hole. Men were assured that explosive would detonate only when fired deliberately.

ZERO HOUR comes as charge is triggered from armored trailer 5,000 ft away. Ring of clay, nearly two miles in dia, surrounded hole after blast. (Wide World photo)

known or projected types of bombs and guided missiles.

"Through penetration tests made with inert bombs dropped in New Mexico in 1950, we now know how deep a bomb will go. Our task is to determine exactly what happens when it is detonated. By using heavily-instrumented buried charges we should find out."

• **Yardstick**—The 320,000-lb TNT charge fired was one of a series that ranged in size from 320 lb to the 160-ton loading. TNT was utilized it is said, because it has "standardized characteristics" and is a yardstick for measurements dealing with explosive forces.

In the Dugway clay, charges and targets were placed underground at various depths and distances from each other to test existing theories and anticipated results. As size of charges and targets increased, distances were increased proportionately. In future rock tests, continuing through next winter, targets will be tunnels rather than concrete.

Previously, it had been expected that blast tests would be confined mainly to sub-surface targets. Since surface facsimiles also were used as targets, it is believed the armed services are recognizing the fact that aerial bombs dropped in Korea seemingly have had little effect on well-built bridge abutments and piers—although the spans of such structures have been destroyed.

• **Electronic recording**—Instrumentation utilized for the big blast was mainly electronic in nature. Hookups were made by cable to recording trucks placed more than one mile from the blast site. Much of the instrumentation was new and designed to meet problems unsolved heretofore.

Stanford Research Institute, Stanford, Calif., was contractor for instrumentation and data recording on above-ground structures. Engineering Research Associates, Inc., St. Paul, Minn., handled the underground test programs for the Corps. The Armour Research Foundation, Chicago, and Rensselaer Polytechnic Institute, Troy, N. Y., served as ERA consultants for the test.

Research technicians on the spot—queried as to how soon accumulated data would be available—said it would take as long as a year to correlate the information acquired. They emphasized that no facts would be made public for "quite a while longer," except as required for public safety in the form of construction engineering data in the light of future international developments.

Morrison-Knudsen Co., Inc., Boise, Idaho, was prime contractor for construction of targets and placement of the charge. H. L. Leventon was project manager and Larry Wicks project superintendent for M-K.

Lt. Col. C. C. Haug is U. S. District Engineer, Sacramento, and F. W. McGregor, Salt Lake City, is project engineer. Also active in the project, from the office of the Chief of Engineers Protective Construction (military), Washington, D. C., were I. O. Thorley, Chief, and Christian Beck.

U. S. Coast and Geodetic Survey work in connection with the program was supervised by Cmdr. Wilbur R. Porter.

Experiments are being conducted in areas where soil and rock types occur in suitable quantity. No special significance is attached to this particular geographical location.

Big-end-down piles in Jersey meadows save half-million cost for warehouse

DRIVING TIMBER PILES with the big end down proved a real money saver for Safeway Stores, Inc., on warehouse construction between the Hackensack and Passaic Rivers in Kearny, New Jersey. Alluvial accretion in this area forms strata of varying materials, thickness and density to a depth of more than 100 ft before conventional, dependable bearing is reached.

Soils at the site include a top stratum of dumped fill (compacted by hauling) which overlies compressible meadow mat and organic peat. Beneath this is a sand stratum 5 to 10 ft thick at a depth of 20 to 25 ft. Below the sand is compressible clay and silt.

For the meat warehouse, where the owner specified "no settlement" as an aid to monorail operation, long composite thin-shell and pipe piles with a design capacity of 50 tons were used. These piles cost $500 to $600 apiece.

In the grocery and produce warehouses, floor loading was to be about the same as in the meat house, but minor settlement was acceptable. Timber piles could be considered, but the upper stratum of sand was not sufficiently thick or dense to prevent an 8-in.-tip pile from punching through. This was shown by test piles.

• **Long piles too costly**—Timber piles to the lower stratum would cost more per ton of permissible load than the composite piles. And sufficiently long timber piles to reach the lower material would be difficult to get in the time permitted.

To meet this condition economically Moran, Proctor, Freeman and Mueser, foundation consultants on the project, recommended timber piles driven with the large end down. Piles were required to have minimum 8-in. tip and 12-in. butt—most of the piles used have a 14-in. butt. These piles were driven at about 6-ft centers each way to support the floor, with small clusters to carry roof columns. The piles were designed to carry 15 tons each. They were creosoted, as the water table is some 10 ft below cut-off. Of course, three or four times as many wood piles were required; but cost was $50 to $60 each, making a substantial saving for the owner.

Piles were diven to 20 blows per ft with a 5,000-lb ram, 3-ft drop, single-acting steam hammer. A foot-long piece of 10-in. dia pipe, welded under the driving cap, served as a keeper for the 8-in. top of the timber piles.

• **Spud makes holes**—Generally, the piles stood the driving well. Several blows were required to penetrate the top fill, then the pile moved readily until it reached the sand, where resistance mounted rapidly. Occasionally, piles split at the top and had to be sawed off, then driven further. If this happened at all frequently in an area, holes were spudded through the compacted surface fill by driving a 12-in. dia bullet-nosed pipe then withdrawing it to insert the timber pile. Piles that were a little outside usual tolerances on straightness bowed under hammer impact, but good straight piles showed little sign of distress.

It might be expected that the piles driven with the big end down would move easily in the hole made by the large butt. That wasn't the case; piles became remarkably firm laterally immediately after driving. Soil apparently moved out around the butt, temporarily compressing, then immediately expanded to relieve the unbalanced pressure and hold the shaft tightly. Driving nearby piles speeded the reforming of the soil so the piles were held firmly against movement.

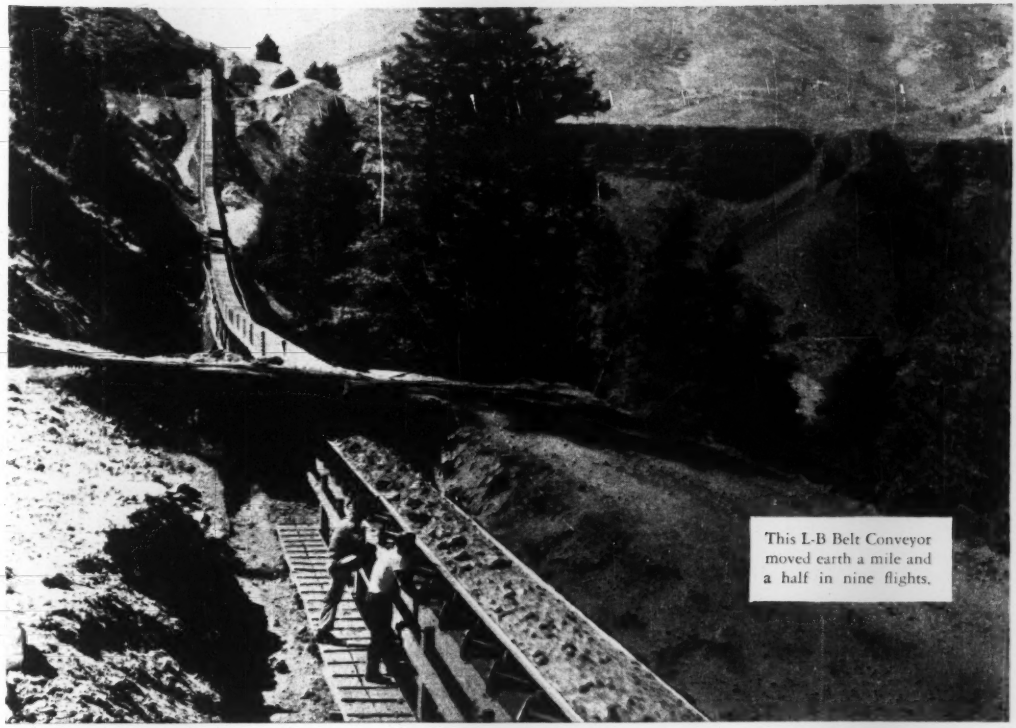
Load test to 26 tons on individual piles showed little movement.

• **Save half-million**—By use of the large end down rather than a tip that penetrated the upper bearing stratum it is estimated that more than a half million dollars was saved. Also, a considerable amount of time was saved over the originally contemplated use of small-tip piles driven to the deep stratum.

For Moran, Proctor, Freeman and Mueser, foundation consultants, Paul M. Wentworth was in charge. Turner Construction Co. holds the general contract, with Robert Hettema, superintendent. Fehlhaber Pile Co. drove the "big-end-down" wood piles under supervision of Aaron Burros.

UNDERSIZE PILES?—No. These are the small ends of piles driven big-end-down to get more bearing.

PILE STARTER—Where initial driving resistance caused pile damage at hammer, this pipe spud overcame difficulty.



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SEAT supporting beam over raised ceiling was clipped to girder, then welded.

STIFFENER PLATES connect flanges of beams welded to column flanges.

COLUMN FLANGES are braced where a heavy beam opposes a light one.

Welding a 10-story VA hospital

- **Money and steel saved despite handicaps of last-minute design changes**
- **Cost data shows where the welding dollar goes**
- **Experience on this job indicates how greater savings can be made**

R. A. Phelps
Superintendent of construction
Minneapolis Veterans Hospital
Minneapolis, Minn.

ERECTION COSTS were reduced and critical structural steel was saved by welding the structural frame of a 10-story addition to the Minneapolis, Minn., Veterans Hospital. Another advantage of welding this job was elimination of riveting noises—important because of the proximity of seriously ill patients in the main hospital building.

The original design called for a riveted steel frame. A general contract was awarded to J. D. Hedin Construction Co., of Washington, D. C., and steel fabrication and erection was subcontracted to American Bridge Co. But when the hospital's medical staff learned that the job was to be riveted, it protested strongly: "The incessant, repetitious din of riveting will have a serious, detrimental effect on the many very ill patients in this hospital."

• Riveting changed to welding—The Construction Service of the Veterans Administration is conservative in building design, as are all federal agencies. This organization never had designed or built a multistory welded structure. Hence, it was quite an unusual step for the VA to request the contractor to submit a proposal for a change to welded construction.

The general contractor and steel subcontractor were willing to make this change—not merely for noise elimination, but because steel tonnage would be less. Furthermore, while enough qualified riveters could not be obtained in the Minneapolis area, many war-trained welders were available.

Since neither standard designs nor specifications for welding were available and since design revisions required considerable time, the redesign was barely able to keep ahead of construction. For some time after steel erection started, work was carried on in accordance with information in manufacturers' handbooks and national codes. When approved drawings and specifications were finally received, it was necessary to revise some of the welding. This increased costs.

Steel erection was started Sept. 25, 1950, and completed Feb. 1, 1951. Welding was begun Oct. 17 and finished March 17.

Practically all the work was accomplished in one of the coldest Minnesota winters. The temperature rose above 32 F on only five working days after Nov. 9, and on twenty days it stayed below 0 F. There were also twelve days of heavy snowfall. This bad weather also increased cost of the work.

• Steel saved—Estimated reductions in weight of structural steel as a result of the change to welding are shown in Table I. Figures for riveted work are estimates based on plan take-off and job records of a similar hospital building. Figures for welded work are actual weights and costs for the 10-story hospital addition.

Table I indicates a 9.8% reduction in steel tonnage with welding. This represents a direct saving in first cost of steel and an indirect saving in freight, handling and erection costs.

• Fabrication costs—No information is available on the cost of shop fabrication for this job. However, there probably is little difference in shop costs on riveted and welded work: The accuracy required for the welded design in cutting to length, blocking out sections of webs and flanges for necessary clearances, and in locating and welding erection clips and seats, would offset savings in handling costs due to reduced weight of materials.

• Unloading and sorting—Steel arrived in railroad cars, which were spotted on a siding about one-half mile from the job site. This track had ample hard-standing space immediately adjacent for sorting and piling steel. A truck crane sorted the steel into piles on wooden pallets for mechanical handling. All equipment, planking and miscellaneous bulk sup-

SPANDREL CONNECTION—web and flanges are welded to the column.

TYPICAL CONNECTION—beams were clipped to columns, then welded.

FILLER ANGLES connect beams to columns across gaps greater than ¼ in.

plies also were handled in this area.

Labor—unloading and sorting	$10,200
Tons handled through yard	2,100
Labor cost per ton	$4.86

• **Hauling to site**—A straddle truck transported the steel in pallet loads to the site. The loads were delivered to the erection crane if needed at once, or placed in a convenient nearby location. Use of this machine resulted in a material saving in hauling costs.

Cost of truck operator	$1,200
Total tons moved	2,100
Labor cost per ton	$0.57

• **Setting base plates**—Anchor bolts were set in the concrete pile caps with the usual degree of accuracy. Suspended from wood planks attached to wood forms, these bolts shifted slightly when concrete was placed. On a riveted job, much of this variation is taken up in permissible tolerances, but with erection clips for welded construction, this cannot be done.

Total tolerance allowed was ⅛ in. at each end of a beam. Due to overrun in depth of column steel as rolled, this tolerance was often entirely lost. Thus, it was necessary to shift anchor bolts and spot base plates with extreme accuracy. This took considerable time. When it is known that erection clips are to be used, a saving can be made through greater care in setting and maintaining alignment of anchor bolts during concrete work.

Labor—setting base plates	$1,370
Tons of plates	38.37
Labor cost per ton	$35.44
Number of plates	250
Labor cost per plate	$5.48

• **Steel erection**—Although this is a 10-story structure, all the steel was erected from ground level by a crawler crane. It had a 100-ft boom with a 35-ft jib. By careful maneuvering and selection of working areas, it was able to set the highest beam in the building with ample free way in the load line.

Columns were erected in two-story lengths, splices being made 2 ft above floor level in alternate tiers. Lugs were welded on the columns at splices for temporary bolts. After splices were welded, bolts were removed and lugs burned off.

Erection clips and seats designed by Van Rensselaer P. Saxe, consulting engineer, of Baltimore, Md., were used for temporary connections. A forged U, or seat, was welded to a supporting member, and a forged prong, or clip, was welded to each

TABLE I—STEEL FOR RIVETED AND WELDED DESIGNS COMPARED

Item	Riveted—tons	Welded—tons	Saving—tons
Beams	1,264.66	1,264.66	.....
Beam connections	157.11	.....	157.11
Erection clips	.....	9.33	−9.33
Columns	758.97	758.97	.....
Column splices	22.97	4.50	18.47
Base plates	38.37	38.37	.....
Rivets	75.00	.....	75.00
Welding rod	.....	10.9	−10.9
Stiffener plates	.....	4.5	− 4.5
Totals	2,317.08	2,091.23	225.85

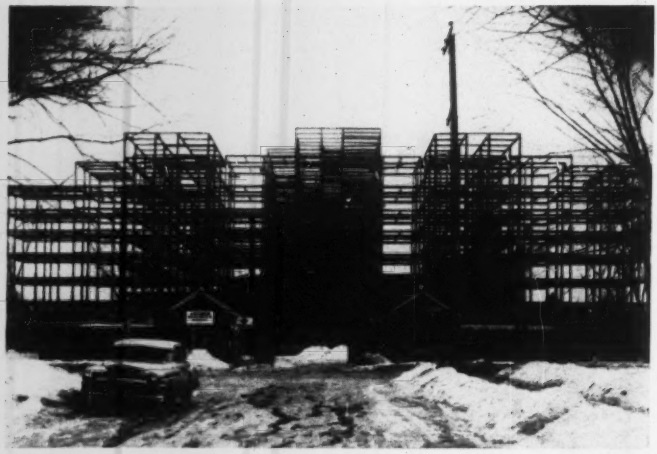
TABLE II—EQUIPMENT COSTS

(Estimate based on amortization of equipment in 60 working months)

Unit	First Cost	Months Used	Monthly Depreciation	Total Depreciation	Monthly Operating Cost	Total Operating Cost
Erection crane	$65,000	4	$1,083	$4,332	$350	$1,400
Truck crane	30,000	4	500	2,000	200	800
Straddle truck	10,000	4	166	664	150	600
*12 welders	2,000 ea.	6	400	2,400	500	3,000
Misc. equipment	10,000	6	166	996	.....	.....
				$10,392		$5,800
						10,392
						$16,192

* Average number of welders in use.

Total equipment cost	$16,192
Total tons erected	2,050
Equipment cost per ton	$7.90



STEEL FRAME for 10-story hospital was welded to eliminate noise. At the same time, steel tonnage was reduced and construction costs lowered.

end of a beam. In making the connection, ironworkers brought the clips in line with the seats and drove them home with a sledge hammer. A projection, or lug, on the clip engaged the underside of the seat, thus preventing the beam from being disengaged by later vibration.

Time required for erection with these clips differed little from that for a riveted job. In placing beams at the first level above each column splice, considerable time was saved; columns were not rigidly held a fixed distance apart, and clips and seats could be easily aligned and driven together.

However, time was lost at the upper levels. With the lower-level beams in place, columns were rigid, and invariably the tops flared apart a small amount. Since the clips provide no take-up, it was often necessary to use lines, come-alongs, or other methods to draw the columns together.

This type of clip could be greatly improved if, when it is attached to the bottom flange of a beam, a ½-in. long lip of relatively thin metal were added to the vertical leg. Just prior to raising each beam, the lip of each clip would be bent out ¼ in. to provide an extra ½-in. tolerance in column spacing. When a beam is lowered into place, the leading edge of the lip would engage the seat. As the beam is driven home, the thin lip would bend, allowing the clip to enter the seat to full depth, lock and also pull the column into place. Any improvement that would provide some takeup in the clip will save many hours of erection labor.

In addition to the delays due to alignment of columns, work also was slowed by bad weather. On many days, the steel frame was coated with ice, creating a dangerous condition. Erection proceeded even in snow storms, when it was difficult to see the workmen from the ground. These delays added to erection costs.

Further increases in cost were brought about by Saturday work at double time—necessary to attract and retain workmen.

Cost of erection labor....	$9,640
Tons erected	2,041.4
Labor cost per ton.....	$4.72

• **Plumbing steel**—When the first-tier steel was erected, it was carefully aligned and plumbed. After that, little difficulty was experienced. The close-fitting erection clips held the beams level and the columns perpendicular.

Because the frame was subjected to sleet, snow and high winds and since bad weather held up the welding work, the erector considered it unwise to depend only on the clips to retain rigidity. So he added guys and tie cables to resist lateral forces.

Labor cost—plumbing....	$4,950
Tons aligned	2,041.4
Labor cost per ton.....	$2.42

• **Welding**—A maximum of 20 welders was employed, the average being 12. Practically all welding was carried on under adverse weather conditions and other obstacles, which materially increased cost of the work.

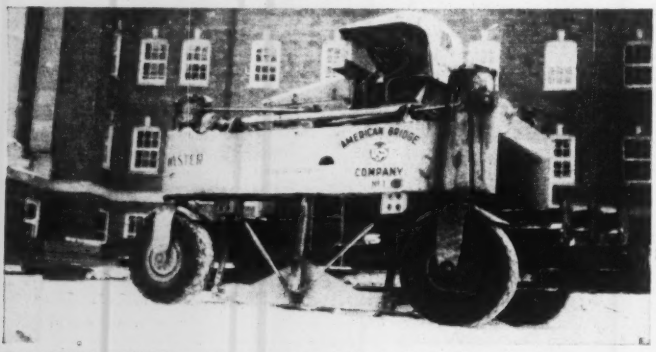
Lack of approved details increased costs, since much of the early work, which followed commercial practice, had to be redone to conform with more stringent government requirements. Furthermore, the fabrication shop had not provided many of the stiffener plates later required. These had to be field welded in place at a much greater cost than if they had been shop welded.

Temporary electrical service available could supply only 14 motor-generator sets. The balance were gas-engine-driven units, which caused considerable trouble and lost time in cold weather.

Due to prevailing low temperatures, the base metal had to be preheated for practically every weld, as required by the American Welding Society code for temperatures between 0 and 32 F. Also, much time was lost when the temperature fell below 0 F, since the AWS code prohibits welding under such conditions.

Regulations stipulated that erection should not be carried on more than two floors above the welders. Since the erectors gained rapidly on the welders, it was necessary to weld only at alternate floor levels, temporarily skipping floor framing at levels midway between column splices. Considerable shifting of welders was required.

Because of the weather, welders had to wear heavy and cumbersome clothing. This, and the icy condi-



STRADDLE TRUCK carried structural steel about a half mile to the site.

tion of the steel, made movements on the frame slow and dangerous.

Welding costs also were increased by bonus pay work on Saturdays—offered as an incentive to workmen to endure the hardship of this cold weather work.

Labor cost—welding.....	$32,350
Tons welded	2,050
Labor cost per ton.....	$15.78

In spite of the adverse conditions, there was a substantial saving in cost by welding in lieu of riveting. The estimated number of field rivets that would have been required, based on a similar job, is 108,000. Cost per field rivet in the Minneapolis area is estimated to be $0.35. Hence, if the building had been riveted, the cost per ton would have been 108,000 × 0.35/2,050 = $18.44. Estimated saving is $2.66 per ton.

Some other interesting cost figures on welding were developed:

Welding rod used each day was carefully weighed. A total of 14,025 lb was used in 972 welder-days, or 14.5 lb per welder-day.

Welder's wage was $18.20 per 8-hour day, or $1.26 per lb of welding rod.

The average weld was a ⅝-in. fillet. Due to field conditions, metal equivalent estimated to be equal to that required for a ¾-in. weld was laid down to meet minimum requirements. With a ¾-in. weld weighing 0.50 lb per lin ft, a welder averaged 14.5/0.5, or 29 ft of weld per day.

For an average beam connection, field welding totaled 2.28 ft of weld. The average day's work was nine such beam connections, or 20.52 ft of weld. Hence, wastage of rod is estimated to be (29—20.52)/29, or 29.2%.

With a shear value for rivets of 15,000 psi and for fillet welds, 13,600 psi, a typical field weld 3½ in. long is equal to eight ⅞-in. rivets. (In this comparison, no value has been given to the added support provided by the erection seat, which would be equivalent to several rivets.) Production rate of welding is equivalent to 8 × 9, or 72 rivets per welder-day. With an average of 4 ironworkers and ¼ foreman in a riveting crew, welders' work rate is equivalent to 72 × 4.25, or 302 rivets per crew day.

• **Miscellaneous job costs**—For all incidental labor items, such as erecting and dismantling temporary buildings, repairs to equipment, planking floors and erecting welders' scaffolds:

Cost of miscellaneous labor	$7,070
Tons erected	2,050
Labor per ton.....	$3.45

• **Total field labor cost—**

Total labor	$66,780
Tons erected	2,050
Total labor cost per ton..	$32.57

(Note: This figure does not include such items as insurance.)

For field overhead, with labor consisting of a general foreman and one clerk:

Cost of field overhead...	$4,668
Tons erected	2,050
Overhead cost per ton...	$2.28

• **Future for welding**—Experience on this job encourages the belief that welding will fast replace riveting for structural steel work. A definite saving can be made in the weight of steel used and in labor costs. Welding costs less than riveting, whereas other costs are probably about equal for either type of construction.

Also, it seems reasonable to assume that further development in equipment and techniques for welding will offer increased savings.

There are indirect savings for the contractor in using welded construction with erection clips. Beam and column connections all have square corners, without protruding plates, angles or brackets, greatly simplifying formwork for fireproofing. Also, the interior finish around columns, particularly free-standing columns, will be much less expensive and the final appearance will be greatly improved.

As in this hospital job, a still greater benefit may be derived, since the steel structure can be erected without the disturbing noise of riveting.

Connecticut treats pavements to minimize salt damage

QUITE INDEPENDENT of parallel thinking in New York State, engineers of the Connecticut State Highway Department recently came to the conclusion that scaling of concrete pavements can be reduced by treating the surface with a bituminous oil. New York's Highway Department began experiments with this type of treatment in 1948 and expanded them in more recent years (ENR Aug. 24, 1950, p. 32). It applies bituminous oil at a rate of about one-seventeenth of a gallon per square yard of new pavement. Where conditions appear to warrant it, the New York State Highway Department makes a second lighter application.

Connecticut began its laboratory studies in 1946. They indicated that new concrete would absorb surface water or saline solutions until such time as the concrete was fully dehydrated (estimated at five years). Those tests also indicated that water or saline solutions absorbed in the winter were subject to freezing and thawing which tended to cause surface disintegration.

This raised a question as to whether a liquid seal could be applied to new concrete to fill the surface voids, causing the pavement to shed the water or preventing its absorption.

As a result of these studies, field tests were begun in 1948 and have been continued, using a water-gas tar meeting specifications given in the accompanying table. The liquid is applied to concrete pavements less than four years old, particularly on slopes and curves where either sodium chloride or calcium chloride is used for ice control. Application is at a rate of one-twentieth of a gallon per square yard, which has been found to sufficient to create a surface resistent to saline solutions.

TAR FOR TREATING CONCRETE PAVEMENTS
(Connecticut Highway Department)

Tar shall be a liquid water-gas tar meeting the following requirements

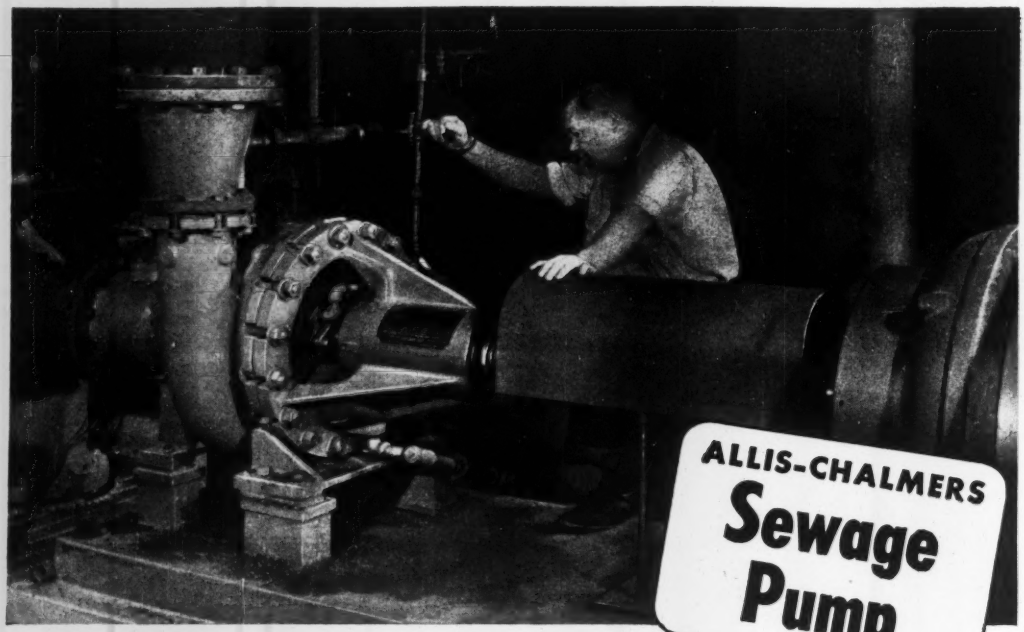
Specific gravity 25°/25°C	1.030 to 1.100
Specific viscosity at 40°C, not more than.....	3.0
Total distillate by weight, to 300°C, not more than.....	50.0
Bitumen (soluble in carbon disulphide) not less than...	98.0%
Water, not more than.....	3.0%

Application of this oil does not injure the concrete. It does cause a temporary discoloration, which wears off in less than a year. The light oil evaporates quickly and the remaining bitumen does not cause any slickness on the surface of the pavement.

The highway department now believes that one or more applications of this water-gas tar will be needed within the five-year period of dehydration to keep the surface voids filled. It holds also that sealing of new concrete in curbed gutters is necessary as well as in other locations where application of saline solutions mixed with sand is required for safety purposes.

The research work was done by R. T. Healy, engineer of materials, and field tests were supervised by A. L. Donnelly, engineer of roadway maintenance, all under the general direction of G. Albert Hill, commissioner.

Non-Clog Design Keeps Sewage Flowing



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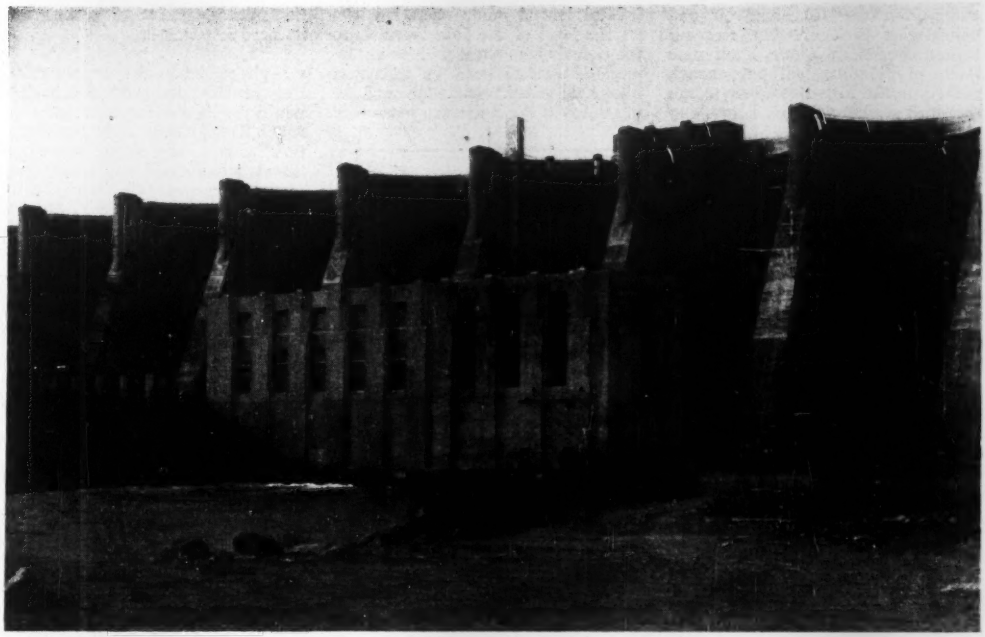


FIG. 1—AT BUCHANAN DAM in Texas the power plant has been extended to provide space for a pump unit that uses off-peak power from steam stations to pump water back into the reservoir above the dam.

Power from pumped storage in Texas

THE FOURTH and largest pumped-storage hydro-electric power unit in the United States was put into service last October.

It was built as an extension of the power plant at Buchanan Dam, near Austin, Texas, one of the six hydro projects that the Lower Colorado River Authority has in operation or under construction. In addition to its size, the installation also is notable for the efficiency of its pump, which is higher than any of the pumps in similar installations in Europe.

Buchanan Dam is a multiple-arch structure flanked by a gravity bulkhead, a controlled and an uncontrolled spillway and a long earth dike making up a total length of nearly two miles. It creates a power head of 132 ft and forms a reservoir of 1,000,000 acre-ft capacity for power and flood control.

• **Factors**—When the dam was built, two generators of 14,000-kw capacity each were installed in the power plant and space was provided for a third. An intake for this unit also was built into the dam, including a short length of 12-ft dia penstock. Flow records for the river indicated that there would be sufficient water during three out of every ten years to operate that third unit part of the time.

A short distance below Buchanan Dam is Inks Dam, which forms a smaller reservoir extending back to include the tailwater pool at the Buchanan plant. It has a power plant containing one 12,500-kw unit operating under a 63-ft head.

A supply of water in the Inks reservoir ample for a pumping operation was one of the principal factors contributing to the decision to make a pumped-hydro installation at Buchanan Dam. Other factors were the flow record favoring installation of the third generating unit, the ease with which that unit could be installed, an abundance of off-peak power in the authority's steam plant and its connected stations, and the fact that no additional staff would be required in the Buchanan plant.

• **Pump installation**—To accommodate the pump required for this new project, the power house was extended, as shown in Fig. 2. Also, a wye was installed in the penstock leading to the turbine that was to drive the third generator, and from it a 12-ft line, controlled by a butterfly valve, was carried over to the pump to act as a discharge line when the pump was operating.

The pump was set with the center line of its impeller 3.75 ft below normal tailwater level in the pool below the dam to minimize cavitation troubles. This impeller is of bronze, 11 ft, 8 in. in diameter. When operating against a 120 ft head it has a discharge capacity of 835 cfs at a speed of 164 rpm.

The pump is driven by a synchronous motor of 13,450-hp capacity. To start the pump, full excitation is given to the motor and the generator of the third unit, after which the turbine of that unit is started. The pump then is brought up to normal speed, the generator and pump motor are synchronized on the line, after which the turbine unit is closed and the butterfly valve opened. As noted earlier, power for pumping, once the unit is in operation, comes from steam stations.

This pumping unit will be operated at night and on holidays, drawing

water from the Inks reservoir and pumping it back into the reservoir behind Buchanan Dam. Each nine hours of pumping will put enough water into the higher reservoir to run the third generator for six hours.

If prolonged pump operation lowers the level of the Inks reservoir to the point where there will be an appreciable loss of head on its power plant, three unit operation will be scheduled at the Buchanan plant with the Inks plant out of service until its head is restored.

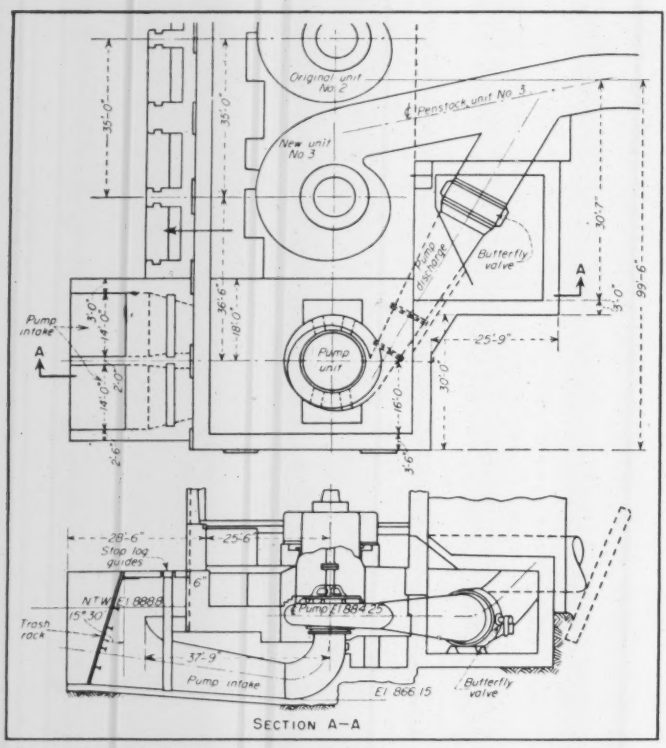


FIG. 2—THE PUMP UNIT has been installed in an extension to the original power plant, adjoining the third generating unit, which was installed at the same time.

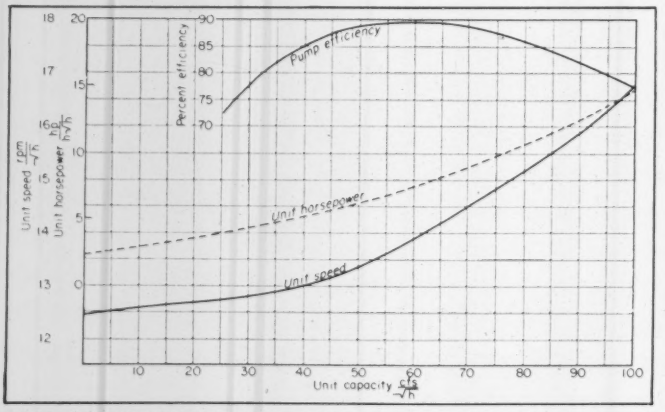


FIG. 3—AN EFFICIENCY of 89.5 percent was guaranteed by the builder of the pump, as shown here. The actual efficiency is expected to be higher.

• **High efficiency**—An important feature of this pumped-hydro installation is the high efficiency of its pump, which is of "open throat construction" as compared to the streamlined throat construction and wicket gates used in pumps for the German pumped-storage projects. An efficiency of 89.5% was guaranteed by the manufacturers, the Worthington Pump and Machinery Corp., which is 4 to 5% higher than that of any German plant. An efficiency of 97.1% for the motor was guaranteed by its builder, the Westinghouse Electric Co. Losses in the large discharge line also are low. As a result, the entire unit has an overall efficiency above 71%.

The total cost of this installation, including pumping and generating units, switching equipment and all construction, was $115 per kilowatt of generator capacity.

Data on which this article is based was supplied by H. S. Hunt, president, Fargo Engineering Company of Jackson, Michigan, consulting engineers on the project, and G. E. Schmitt, assistant general manager and chief engineer for the Lower Colorado River Authority, Austin, Texas.

Pumped-storage plants in the United States

• **Mill Creek No. 2, Murray, Utah**—The output of this 1,030-ft head plant is supplemented by water pumped through a vertical distance of 140 ft from springs about one-half mile below the dam. Water from the springs is caught behind a low dam. A 100-hp pump, controlled by a float switch, raises 3.5 cfs through a 12-in. pipe to the main reservoir. This pump unit was built in 1913. The power used is not necessarily "off-peak" as the float switch operates automatically.

• **Tule River, Calif.**—A similar installation in which water from springs 175 ft and 200 ft below the main dam for a 1,523-ft head plant is pumped into the flow-line canal from the main reservoir by float-controlled pumps. One pump was installed in 1922 and one in 1924. They operate almost continuously from May to January. The water they deliver to the main reservoir is stated to generate about three times as much power as is required for pumping.

• **Rocky River, Conn.**—This plant, located in a tributary of the Housa-

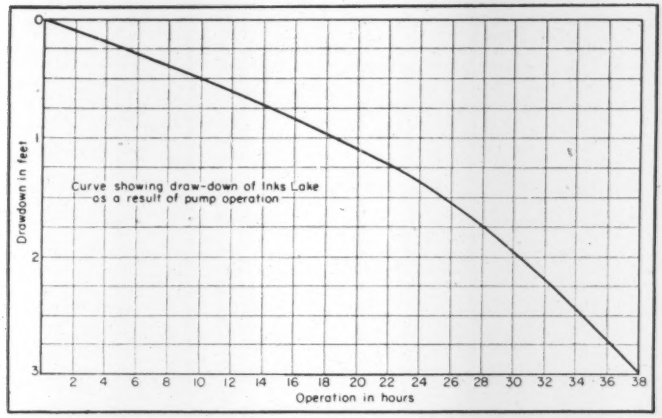

Drawdown in feet
0
1
2
3
Curve showing draw-down of Inks Lake as a result of pump operation
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38
Operation in hours

FIG. 4—THE CAPACITY of the reservoir behind Inks Dam is such that the normal pumping at night will not result in a large drawdown. At weekends, continuous pumping for 36 hours would lower the pool about three feet.

tonic River near New Milford, Conn., and completed in 1928, was the first major application of the pumped-storage principle in this country. Two pumps of 8,100-hp capacity each take water from the Housatonic, and raise it 230 ft to a reservoir formed by a dam in the valley of the Rocky River, using off-peak power. Each pump has an output of 250 cfs. Water is returned to the plant at time of peak load to operate a single generator of 24,000-kw capacity. The reservoir has a capacity of 138,000 acre-ft at a 30-ft drawdown, and is used for both daily and seasonal peaks. Stored water discharged from the Rocky River plant is also used to increase the output of the Stevenson plant farther down the Housatonic. The Rocky River pumps have a maximum efficiency of 91.9%.

• **Lake Lamoka**—At Keuka Lake, N. Y. the Lamoka Power Co., in 1932, built a plant in which off-peak current from a generating station using natural gas as fuel is used to drive a 1,000-hp pump that raises 17 cfs through a vertical distance of 400 ft to Lake Lamoka for storage. At time of peak load the water is released to drive a turbine of 2,500-hp capacity that generates power to supplement the gas-powered generating station.

• **Flatiron plant—Colorado-Big Thompson**—Pumped storage is to be used in connection with the Colorado-Big Thompson power and irrigation project in Colorado. Two generators of 35,000 kva capacity each are to be installed in the Flatiron plant which is to develop the power in the 1,055-ft drop from Rattlesnake Reservoir to the Flatiron section of Horsetooth Feeder Canal in Chimney Hollow. Also installed is to be a combined pump and turbine that will be used, primarily, to pump irrigation water up into Carter Lake through 7,000 ft of 8-ft dia conduit and pressure tunnel against a head ranging from 140 to 290, depending on lake levels. Carter Lake is a large artificial reservoir.

This pump and its motor are to be designed so that they can be used as a turbine and generator by reversing the flow from Carter Lake at time of peak load on the power system.

When acting as a pump, the maximum input will be around 13,000 hp when delivering 370 cfs against a 240-ft head. When operating as a turbine an output of 7,500 hp under a head of 250 ft is specified. Normally the pump will operate 16 hours a day. Construction of the power house is under way, and bids have been received on the pump-turbine combination.

Interior finishes for radioactive rooms

Selection of the proper interior finishes is important for rooms in which radioactive materials will be handled. Walls, floors and ceilings should be surfaced with materials that permit safe, economical and efficient isolation and removal of stray active substances. Such construction would decrease hazards to personnel, produce long-time savings in decontamination costs and improve experimental precision by preserving low-background radiation values, preventing cross contamination.

Suggestions for interior finishes for low level radioactivity facilities are given in an article, "Decontaminable Surfaces for Millicurie-Level Laboratories," by S. E. Eaton and R. J. Bowen, NUCLEONICS, May, 1951, p 27.

• **Flooring**—For flooring above grade, the authors recommend a ⅛-in. thick, high-quality sheet vinyl or rubber product. As an alternative, a high-grade battleship-type linoleum can be used, at a moderate saving in initial cost. However, necessity for waxing frequently is a deterrent because of maintenance cost and dust hazard.

For on-grade installations, the authors believe the most satisfactory flooring to be carefully installed ⅛ or 3/16-in. thick, high-grade greaseproof asphalt tile that has received a liberal initial coating of emulsion wax. The wax must be well buffed to drive it into cracks. If a non-greaseproof grade of asphalt tile is used, trays must be provided for equipment, such as pumps, that might spill oil on the floor. When contamination may occur frequently, the exposed area of tile may be covered with a strip of 1/32-in. vinyl sheet. This material may be held in place with a pressure-sensitive "stripping" adhesive, such as a solution of polyisobutylene in varnish makers and painters naphtha, making possible removal of the vinyl sheet.

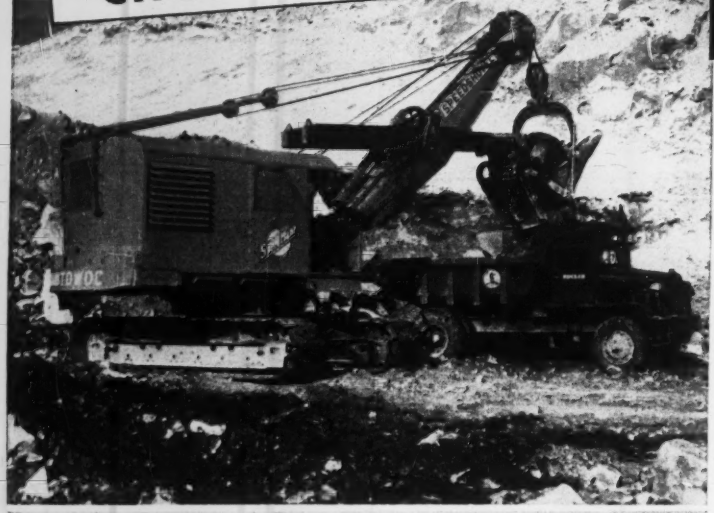
A vinyl or rubber sheeting may also be used for on-grade floors. But if moisture should penetrate through the floor, the adhesive might deteriorate and the flooring lift.

• **Wall and ceiling surfaces**—Interior finishes for walls and ceilings should be smooth, crack-free, nonporous and easily removed. The authors suggest a stainless-steel, thin-plywood-laminate panel, the wood portion being flameproofed, if desired. As an alternative, double-faced painted steel partitions may be used.

Where contamination may occur frequently, a strippable film, preferably a vinyl type, may be applied over the basic surface or coating.

Cracks between wall panels may be taped with ethylene or vinyl material. A disadvantage, however, is the sticky line of adhesive at the edges of the tape, that might in time capture dirt and radioactivity. A good technique, the authors say, is to calk the cracks with a thickened thiokol calking compound that sets to a firm rubbery consistency without shrinking.

MANITOWOC
CHOICE OF THE LEADERS



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BULKHEADS sealed culverts to be floated into position. I-beam drag grader in foreground helped establish final invert grade.

In-place fabrication found impractical, culvert is floated and sunk to grade

SHORTLY after excavation began for culverts to carry a creek under a runway extension at McChord Air Force Base (Tacoma, Wash.), a serious water problem became apparent. Water level varied from 6½ to 8 ft above invert elevation of the culverts, and a pervious gravel formation precluded dewatering the trench to grade. This prevented in-place fabrication of the 8-gage culverts as originally intended.

It was decided instead to build one pipe at a time on a bench alongside the ditch and to float and sink it into position.

The contract, awarded by the Corps of Engineers to Woodworth & Co., Tacoma, called for construction of two 144-in.-dia culverts to act as a stream enclosure under the extended runway. These culverts are among the largest of their kind ever built.

The ditch was 18 ft to grade. Two 1½-yd draglines made a total excavation of 40,000 yd. The first cut was 10 ft deep, to approximate water level. The second cut carried down to invert grade. A bench at the 10-ft depth was the erection platform.

• **Fabrication crew**—Two five-man crews worked on the fabrication, which required 115,050 bolts. After they gained experience, the crews were able to erect 240 ft in an 8-hr shift. Crews following the erection crew placed all remaining bolts, tightened them with air wrenches, placed strutting timbers, and sealed each end with a plywood bulkhead to permit floating into position.

Meanwhile, the entire trench was excavated several inches below grade. An I-beam grader was dragged from one end of the trench to the other, and back again, by draglines. The trench was carefully plotted by sounding from water level to trench bottom. Where necessary, the trench was backfilled to bring it to grade.

When fabrication of the first culvert was completed to its full 1,530 ft length, four cranes, each with two lines to the pipe, were placed on the far side of the ditch. Four piles were driven on a line that would be the far limit of the first pipe when in correct alignment.

On the same side of the ditch as the culvert were seven tractors with winch lines (preventer cables) to the pipe. These tractors first took a strain on the preventer cables and rocked the pipe so chocks could be pulled.

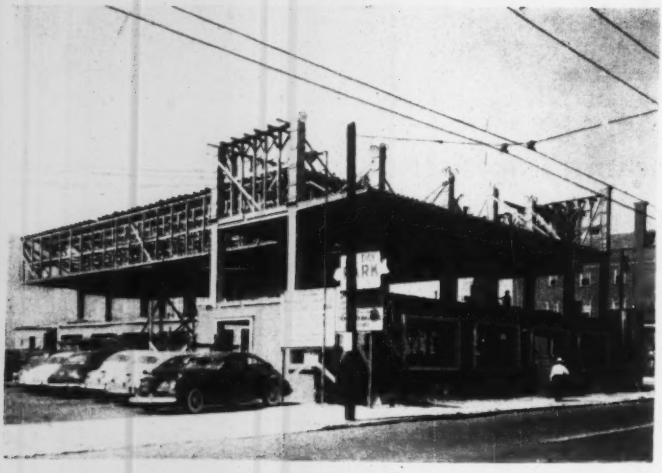
The preventer cables then were slacked off so the pipe could roll off the skids toward the ditch. The cranes pulled the pipe up snug against the piling, their wire-rope pairs acting as double rolling hitches. The pipe was then rotated until struts and beveled ends were in correct position. Lines from the tractors aided in the rotation.

The bulkheads kept the pipe afloat until it was positioned, a matter of 40 min. Correct longitudinal position was secured by a truck-mounted winch at each end of the culvert. The bulkheads were then removed and water allowed to enter to sink the culvert into position.

After a similar installation of the second culvert 12 days later, a 10-ft dirt fill was placed, and the creek returned to its original course. The culverts weigh 386 lb per running foot, a total of more than 600 tons. They are designed to withstand a total pressure of 160 tons a running foot of culvert.

J. Alden Woodworth, vice president, and Gerald J. Keeley, superintendent, of Woodworth & Co. were in charge of the project.

Self-supporting walls hide . . .



. . . Long-cantilever floor slabs

CONCRETE FLOORS in a new three-story office building in Louisville, Ky., cantilever 15 ft beyond the outer row of columns. Comparative studies showed this to be more economical than conventional beam-and-slab construction.

The structural floor slab supports only its own weight and live loads. Exterior brick walls are self supporting.

The $500,000 structure houses the home office of the Louisville Cement Co. Providing 30,000 sq ft of floor area, it has a reinforced concrete frame and floors. Offices have fluorescent lighting, acoustical ceilings and air conditioning.

• **Site influenced design**—The building occupies a corner lot. This location was an important factor in deciding upon a cantilever design.

Because of the great length of the structure to be built along property lines bordering city streets, a great number of combined footings would have been required if conventional beam-and-slab construction had been used. This appeared to the designers to be an extravagance for this size building. Therefore, they made a comparative study of different types of structures. They finally selected the cantilever design because:

1. Number of combined footings was held to a minimum.
2. Exterior columns and spandrel beams were eliminated.
3. Floor to floor heights were minimized by using wide, shallow beams in conjunction with the cantilever slabs.
4. With the reduced number of columns and beams, formwork was less than for normal construction.

• **Cost-cutting steps**—In the transverse direction, the main portion of the building is divided into three bays. The center bay is 23 ft wide. The two side bays—cantilever floor slabs—are 15 ft wide. Columns spacing is about 17 ft in the longitudinal direction.

Beams were made 36 in. wide and 14 in. deep and employed generally throughout the structure, so that repeated use could be made of the forms. In the design, account was taken of continuity, to reduce the beam size and save steel. Columns were computed to take part of the bending.

To cut down on the thickness of floor slabs, the designers placed beams off center with respect to columns. In this way, they developed a greater haunch action in the 23-ft span.

During the design stage, the designers were concerned over anticipated deflections of the cantilevers. They finally decided to cast the slabs with cantilevered ends raised ¾ in. above the required floor level. After the forms were removed, the total measured deflection was ¾ in., and most of this was caused by moving of the forms when concrete was placed.

• **Free-standing walls**—Because of the exterior architectural treatment, the dead load of the exterior brick walls is not carried by the floor slabs; the walls are self-supporting. They are, however, tied to the slabs at 4-ft intervals with 2 x ¼-in. strap anchors. Though built into the wall, these anchors are set in slots in the slabs, so that vertical movement is possible. In this way, transference of vertical loads from walls to floors is prevented, while wind loads are transmitted to the structural frame.

According to Arnold M. Judd, engineer with Nevin and Morgan, Louisville architects and engineers, who designed the building, "Selection of this type of structure was found to be wise. Savings of about 10% were realized, and a very functional building was constructed."

E. R. Ronald and Associates were consulting engineers. Otho Tapp was the general contractor.

We Mobilize for Freedom

CONTROLS . . . A Two-Edged Sword

It may seem dangerously premature to talk about getting rid of emergency government controls while all-out war is still an imminent possibility.

But success in this strange struggle for our freedom into which the Russian Communists have plunged us requires that we:

1. Maintain a whole battery of controls designed to speed defense production and curb inflation, and at the same time

2. Work to end the controls at the earliest possible moment.

Here is the reason why this editorial—fourth in a special series on mobilization for defense—is devoted to the need for a speedy release from controls.

If the Russian Communists can force us to maintain indefinitely the present system of government controls, they will have won a tremendous victory. They will have saddled us with a system of collectivism which, over a period of years, would be fairly certain death to freedom of business enterprise.

Make no mistake about it. This is not an argument against emergency controls. We need controls now to break a right of way for our mobilization program through the business boom. Indeed, the third editorial in this special series was titled "Why Controls Are Necessary." It stressed both the need for controls and the need for positive cooperation to make them work.

Controls Can Undermine Our Economy

But these controls surely chisel at the foundation of our normal economic system. So long as we have them, many if not most key business decisions will be made in Washington bureaus rather than in the free market place. For example, the *National Production Authority* administers a *Controlled* Materials Plan (italics ours) which directs the flow of basic metals, and decides who can use them for what purposes.

Happily, the people who operate these controls are not using the methods of a secret police state.

Even more happily, most of the leaders who have been drafted to manage the controls are not in love with their jobs. They are doing their best in the thankless task of making controls work. They recognize the danger of chronic controls.

But the fact remains that our economy is

operating under arrangements which carry it a long way toward the pattern of centralized control the Russians would inflict on the world.

The Wilson Plan

A plan for getting rid of these controls has already been developed. It was put together by our Director of Mobilization, Charles E. Wilson — while he was working day and night to set up the necessary emergency controls.

The Wilson Plan — if we escape all-out war — will strengthen our defenses and our economy. By 1953, it calls for:

1. Providing the weapons to equip an armed force of 3½ to 4 million, together with a supply of weapons for our allies.

2. Building a stockpile of weapons which, with current production, would be sufficient to carry on an all-out war for a year.

3. Building the manufacturing capacity by which we could rapidly expand our production of weapons if all-out war should come.

4. Increasing the productive capacity of industry enough to resume the expansion of our civilian economy.

With these jobs done our economy would be big enough and strong enough to meet both civilian and military requirements. And the government controls needed for mobilization could be speedily dropped.

Call for Sacrifice

The Wilson Plan requires a major effort — it means spending more than $50 billion a year for mobilization. That is almost 20 percent of our total production. And this cannot be done without sacrifice. For a time, particularly in the next year, living standards will drop.

But the sacrifice required is amazingly small. At the peak of the defense effort, civilians will still have available to meet their needs about as much as they did in any year before 1948.

To make the Wilson Plan succeed we must curb inflation. A second year of inflation such as that which we have had since the Korean war started would multiply disastrously the costs of our defense program. One key part of a successful program to curb inflationary pressure, which soon will be building up again, is a pay-as-we-go tax program. The second editorial in this series urged that we do our utmost to pay as we go.

We Cannot Out-Control the Communists

But, above all, to make the Wilson Plan work we must keep our sights set on the crucial importance of increased production. Our problem is to increase our capacity to produce so that we can carry both a major military program and an expanding civilian economy for as many years — General Bradley thinks it might be fifteen or twenty — as the menace of Russian Communist aggression persists.

If we do not produce enough to do this double job, we shall be confronted with the prospect of having to live indefinitely under government controls of the sort that have been set up since the start of the Korean war. That would be delightful to the Russian Communists. It would go far toward making over our economy on the Moscow model.

Even if we wanted to, we never could hope to out-control the Russians. They are miles ahead of us in that line. But we can out-produce them, by a tremendous margin. By doing that we shall travel the surest road to victory.

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says: WALTER J. NOLAN, Division Superintendent, **FISH CONSTRUCTORS**

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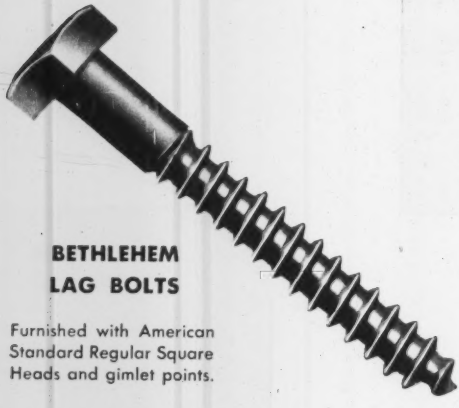

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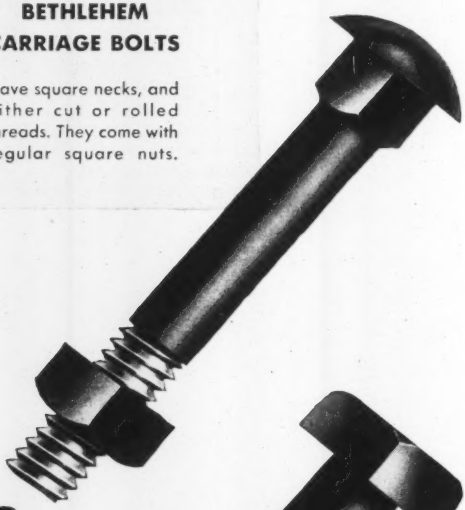

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READER COMMENT

Mysore's Lighted Palace

Sir: I was in India about 30 years, 25 as chief electric engineer to the government of Mysore State and 5 years connected with the Tata Hydro Electric Agency in Bombay. Therefore I want to protest, mildly, the statement in your article of March 1, p 32 that the lights on the Maharaja's palace in Mysore City are "pretty vulgar close up." I agree with you that they are an "unbelievably beautiful sight from a distance."

I was personally responsible for the installation of every one of those approximately 100,000 lamps varying in size from 25 to 1,000 watts and including the ruby light on the dome of the palace. The arrangement of the lights was worked out to present a flambeaux or lighted torch effect when viewed from the palace courtyard and other nearby points in order to harmonize with the oriental type of night processions illuminated by torches, and at the same time to present a beautiful misty effect when viewed from distant points.

The palace illumination served as a most effective way to advertise Mysore's electric power supply. Not one rupee was ever expended on advertising our electric power supply, but it was well known as it served all classes of people in Mysore state and supplied the power for the construction of the Madras government's dam at Mettur.

The articles relating to irrigation works in India as presented in your February and March issues are very interesting to me as I am familiar with many of the irrigation projects that had been completed and in operation before the end of 1942 when I returned to the U.S.A. Several of these projects of magnitude date back to and before the middle of the previous century i.e. (1) The Ganges Canal taking off from the Ganges at Hardwar has a capacity of 10,000 cfs and irrigates about 1½ million acres; and (2) the Cauvery Canals taking off at Sirangam near Trichinopoly have a capacity of 20,000 cfs and irrigate about 2 million acres. It may also be noted that the Nizam Sagar Hyderobad and the Krishnaraja Sagar in Mysore were constructed and put into operation in the 1920s and 1930s to irrigate many thousands of acres, while at about the same time the Sukkur Barrage and Canal System was completed on the Indus River in what is now Pakistan. This project commands over 6 million acres and has about 40 miles of canal larger than the Suez Canal. India is thus a pioneer in the conservation of water from the two monsoons and the melting snows of the Himalayan mountains.

Americans have for many years stood very high with the people of India, from the farmers right on up to the Maharajahs. I feel very badly therefore, when I see in print or hear anything disparaging any aspect of India. I know the people of India to be upright, God-fearing and worthy of the friendship and help of all Americans.

SHERMAN GUY FORBES SR.
Silver Spring, Md.

Glass and concrete react

Sir: Recent discussion of the possibility of reinforcing concrete with glass fiber calls for a word of caution. Glass is strongly, almost violently, reactive with portland cement. Some years ago, while experimenting with reactive aggregates, I made a number of specimens in which common glass was used for coarse aggregate. Some showed linear expansions of more than 2%. Loss of strength was above 50%. In every case, the surfaces of the glass particles recovered after testing showed deep etching. Loss of bond was very great.

Use of 25% of limestone in the aggregate seemed to almost completely inhibit the reaction. It seems probable that the introduction of glass fiber into concrete would reduce, rather than increase, the tensile strength.

HAROLD H. MUNGER
Asst. Prof. of Applied Mechanics
Kansas State College
Manhattan, Kansas

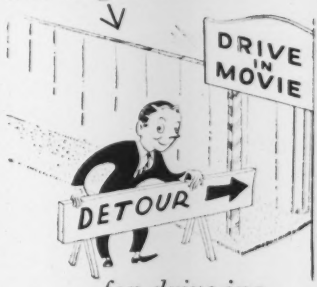
Soil pan-heated before

Sir: Your May 3rd issue carried an article on p 39 by Zwerski and Graves describing a method of obtaining moisture contents of earthfill materials by heating the soil in an open pan, over a hot plate. This was described as a new development.

In 1938-40, some 6,000,000 cu yd of rolled-fill dam was constructed for the Santee-Cooper project in South Carolina, and the control was entirely by this method. Shacks 4x8 ft, mounted on skids, were kept on the fills and used as laboratories. A gasoline stove was used for heating, small pie pans for containers and a trip scale for weighing.

I feel certain that the Santee-

this might work



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Cooper job was not the first on which the hot-plate method was used, since the scheme is a more or less direct solution of a problem faced by all field engineers responsible for moisture control of rolled fills.

E. MONTFORD FUCIK
Vice president
Harza Engineering Co.
Chicago, Ill.

Sir: The article by Zwerski and Graves describes nothing not already known to soil laboratory technicians.

Our organization and many others have used hotplates for rapid moisture determinations for over twenty years. We have done this only after carefully checking the magnitude of the error involved with each soil. We have found that while many soils can be tested in this way, many others cannot. Therefore, it is misleading for the authors to suggest this method for field use without also suggesting that on each job the hotplate method be checked against the oven method.

For a thorough discussion on soil moisture we suggest the following: Lambe—"How Dry Is A Dry Soil," Proceedings, Highway Research Board, Vol. 29, p. 491 (1949).

GEORGE F. SOWERS
Consulting Soils Engineer
Law-Barrow-Agee Labs., Inc.
Atlanta, Ga.

Sir: I have received a copy of a letter to the Editor from Mr. G. F. Sowers, criticizing our article "Compaction Control for Earth Fills Made Easier by Rapid Moisture Test."

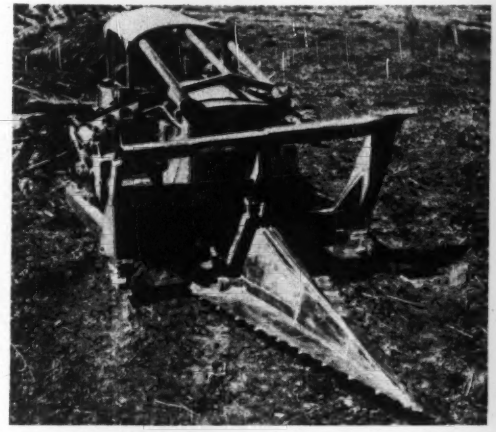
Mr. Sowers apparently misinterpreted our article. Of course *similar* methods are not new to soil mechanics laboratory experts (the article pointed out that one author used the method ten years ago), but it is new and will be of value to inspectors on earthfill jobs. Our study defined the temperature and time range and procedure for these "non-expert" inspectors who at present try to guess moisture contents because oven drying is too slow.

The values given in the table of our article shows that there is a time, temperature and procedure for each soil which will duplicate oven drying. Our study made no pretense of drying to a constant weight at each temperature, our only purpose being to duplicate standard oven drying.

Therefore, Dr. Lambe's work, in which he did dry to a constant weight at various temperatures cannot be compared to ours. To the interested and careful reader, the article is of great value and not misleading.

LEROY D. GRAVES
Assistant Professor
Department of Civil Engrs.
University of Notre Dame

FIELD AND OFFICE



Saw-nosed tractor clears land fast

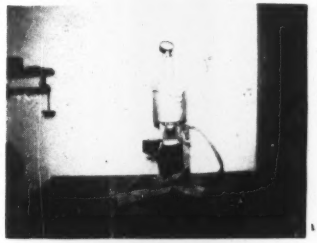
A cat with a nose like a sawfish would be a biological spectacle. But when the cat's a Caterpillar bulldozer and its nose is a pointed 6-ft saw blade, it becomes a spectacular land-clearing combination that mows down 24-in. trees in one pass to clear as much as 10 acres in an 8-hr shift. And, by sticking their noses solely into their own business—namely, the cottonwoods on the Boyson Reservoir site—a fleet of the nosey dozers is completing their 12,700-acre clearing job 6 months ahead of schedule.

The big saw-nose that projects ahead of the bulldozer has several variations at Boysen, where six clearing contractors are using slightly different saw blades and arrangements of teeth. Generally, the saw is bolted to the center of the dozer blade and consists of a flat triangular steel plate with toothed cutting edges, and a heavy stiffening rib running up the center of its 6-ft length. Some of the saw blades are finely cut, with teeth kept sharp; others are coarser and work with a tearing action, so do not require sharpening.

Operation of the saw is simple. The bulldozer operator guides his machine so the saw strikes the tree near the tip of the cutting edge. Driving the rig ahead, he forces the saw through the trunk to drop, with one stroke, cottonwood trees up to 24 in. in dia. Because the blade can be set to cut at ground level, final clean-up is lessened considerably.

A single machine of this type can clear as much as 5 acres of dense timber in 8 hr, and production is twice that figure in areas with less cover. It is estimated that each of the saw-equipped rigs fells more trees than could five chain-saw crews. And, with 12,700 acres to be cleared (of which 3,600 is classified as heavy timber) the nosey dozers are the main reasons why the job will be completed this month.

Six contracting firms are presently engaged in the clearing operations at Boysen Dam, a U. S. Bureau of Reclamation multiple-purpose project on the Bighorn River 20 mi south of Thermopolis, Wyo. One of the contractors, Mid-States Construction Co. of Chisholm, Minn., introduced the saw-nosed machines, and the others were quick to adopt the tool.—Harold W. Richardson, Editor, Construction Methods and Equipment.



Gas content of soils is determined by meter

Gas content of soils can be accurately and easily obtained using a modified air-entrainment meter designed for testing concrete. In fact, permeable soils and soils having a moisture content above the liquid limit can be tested without modification of the meter. Accuracy of the soils tests is comparable to that of tests on concrete.

To test the more impermeable soils, it is necessary to break up the soil into its three constituents—soil particles, gas, and water. This is done in a closed container so that relative proportions of each remain undisturbed. It is accomplished by connecting a motor to the bottom of the meter with the shaft entering the bowl through an air-tight stuffing box. The shaft has an agitator to mix the soil with the added water. Baffles attached to the bowl provide better mixing.

This arrangement results in an air-tight meter in which soil can be placed in its natural state and be thoroughly mixed with added water. The object being to add water until the moisture content of the mixed soil will rise above the liquid limit.

Volume of the soil in its natural state is determined by measuring its displacement in water. Once this calculation is made, the mixer is turned on and the test is then identical with that for air-entrained concrete.

In some cases it may be necessary to take into account the rise in temperature of the mixture due to the energy applied by the agitator. Usually this is small enough to be neglected; however, it is easily applied if necessary.—E. D. Myers, Assoc. Professor of Civil Engineering, Mississippi State College.

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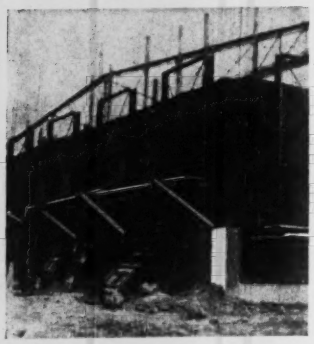

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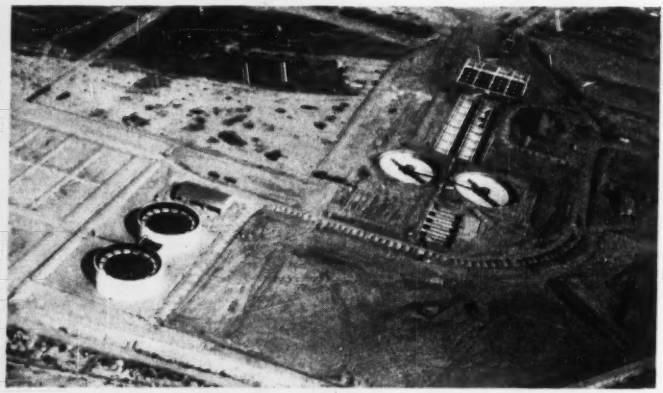


SEWAGE TREATMENT PLANT at Tucson, Ariz., designed for 12 mgd serves 120,000 residents and cost $1,200,000. City of Tucson and Pima County joined in financing the project. Total cost including sewers: $4,000,000.

City and county team up to build sewage treatment plant for Tucson

Cesspools, septic tanks, and other sources of waste seepage are being eliminated in the metropolitan area at Tucson, Ariz., where a $4,000,000 activated sludge sewage facility has been put into operation.

City and county merged to support the Pima Sanitary District which makes facilities available to 120,000 persons.

The new plant, with 12 mgd capacity, was built at a cost of $1,200,000 under direction of Headman, Ferguson, and Carollo, Phoenix engineers. Another $2,500,000 is provided for construction of sewers.

Construction of the plant and sewer lines took about a year. The sewage treatment unit was constructed by the M. M. Sundt Co. of Tucson. The plant has about five times the capacity of an old one which offered only a primary treatment. It includes treatment facilities, control building housing a chemical and biological laboratory, and a tank field for settling.

Because the southwest region is comprised of a tight soil, cesspools do not function efficiently and the surface water in many districts is contaminated. In the Tucson area, particularly, many residents maintain domestic wells which are subject to pollution from sewage wastes.

Philadelphia's planners report on industrial land

The Philadelphia City Planning Commission after a 5-year study, has presented its "Industrial Land Use" report. It points out how to provide, within the city limits, 50 percent more space—6,000 acres—for Philadelphia's fast-expanding manufacturing needs to help assure a healthy economic growth of payrolls and prosperity.

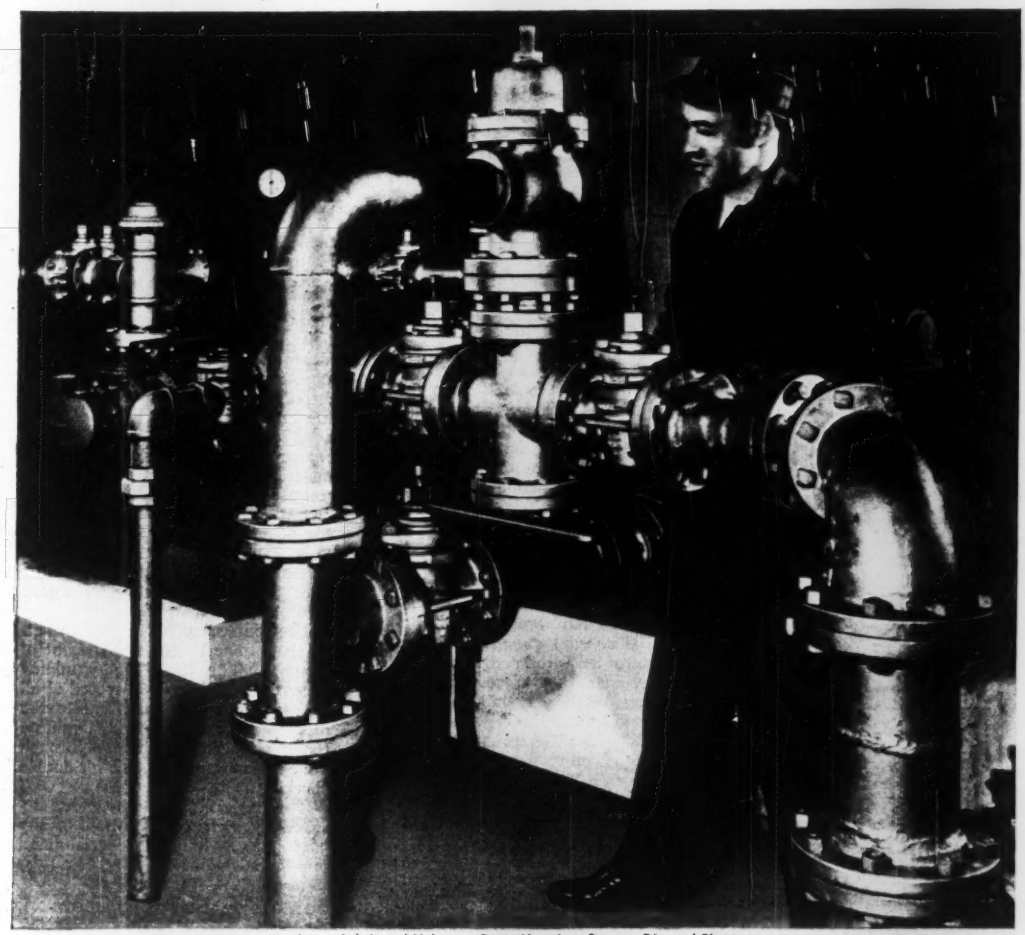
The recommendations would provide sufficient land to meet the city's industrial needs for the next 30 years. The plan calls for industrial expansion principally in the sections of Far Northeast Philadelphia, the Aramingo section in the lower Northeast and the reclaimed Eastwick section in the southwest section of the city.

Under the plan, the Philadelphia City Council will zone the areas to prohibit the erection of houses. The city's Zoning Board of Adjustment has before it requests to zone 619 acres in the northeast. Some present industrial sites would be changed to residential zoning.

The industrial land use "report" calls for most of the present industrial districts to be continued or extended; establishment of new districts or expansion of existing ones to take place along the Delaware River for heavy industry; and medium or light industry to be placed at selected points inside and outside Philadelphia.

The problem of industrial air pollution in the Aramingo section and that of drainage and fill in the Eastwick

(*Continued on page 52*)



Nordstrom Lubricated Valves on Pump Lines in a Sewage Disposal Plant

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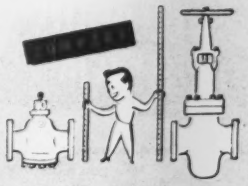

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Municipal . . .

section are being studied.

The planning commission's report calls for the replacement of scattered factories by plants in industrial districts. "Land use" for industrial purposes will be doubled.

The commission foresees 26,000 acres devoted to general manufacturing in the Philadelphia metropolitan area by 1980, as contrasted with 13,000 in 1943.

Metropolitan sanitation dist. proposed at St. Louis

Mayor Joseph M. Darst of St. Louis and County Supervisor Luman F. Matthews of St. Louis County, Mo., have proposed the establishment of metropolitan sanitation district to solve the sanitary sewer problems of both the city and the county. The proposal may be submitted to the voters of affected areas before the end of this year. The district, if established, would have the legal right to acquire, maintain and construct sewers anywhere in the district.

In a joint statement Darst and Matthews expressed the hope the proposed metropolitan agency could "eliminate all the vexing problems we are now confronted with" and that the project may meet the approval of the taxpayers of the city and county, which are to vote on the proposal, if it is finally submitted, in separate elections. It must prove victorious at the polls in both if it is to go through.

Begin land survey for Knoxville expressway

Engineers for the Tennessee highway department has begun right-of-way appraisals for the Magnolia Avenue Expressway in Knoxville. The first one mile section has been approved by the Federal Bureau of Public Roads as an urban federal-aid project. The highway department has begun surveys for the remaining portion to extend from the present project to the west city limits. The expressway will run from Gay Street and Magnolia Avenue, in the central business district, three miles to the west city limits, to connect with the 4-lane highway in use westward for 16 miles to the Knox-Loudon County line at the junction of US #11 with US #70. Magnolia Avenue has been rebuilt and widened to provide a minimum of four traffic lanes with two parking lanes and a raised median, strip—from the point of beginning of the proposed expressway eastward for some three miles to a point near the Knoxville east city limits. Through traffic route will be from west to east.

City department controls material and labor costs

A system effecting tighter control of materials and labor has been instituted in the Department of Lands and Buildings, Pittsburgh, Pa. It is under the supervision of Homer R. Greene, director of the department, and William F. Walsh, the new superintendent.

The new system involved the remodeling of the old warehouse used by the department in Tunnel Street, where all materials are segregated and kept under lock and key. No group of workmen has access to the materials used by another group. A record is kept of all material issued by the storekeeper, who also keeps the time records of the men working out of the Tunnel Street warehouse. A competent bookkeeper has been placed in charge of keeping records not only of materials received and issued, but a record of costs and rentals on all city owned property. It is the object of Mr. Greene and his aides eventually to show a complete cost record for all properties owned by the city. Plans are under way for installation of a cost control index card system.

The purchasing for all city departments is done by the Department of Supplies. The Lands and Building Department is keeping a record of all requisitions for materials sent to the supplies department, and duplicate copies of the requisitions go through the city comptroller's office for double checking.

This revision of methods has resulted since charges of misuse of city labor last year brought a special grand jury investigation.

Edmonton building boom

Construction this year in Edmonton, Alta., and immediate vicinity is expected to reach $100 million. Population has increased 25 percent since the oil strike of 1947, and home-building permits totaled more than $17,000,000 in the first nine months of 1950.

McColl Frontenac Corp. and British American Oil Co. are building refineries nearby to cost $10,000,000, and Imperial Oil has completed an $11,000,000 refinery and will spend several million dollars more in expansion. There is also to be a $10,000,000 pulp and paper mill.

There are plans for a $4,000,000 federal building and $5,000,000 worth of public schools. Warehouse, commercial and office buildings are being erected this year at a cost of $18,000,000, and stores are spending over $9,000,000 in new construction and expansion.

Municipal Briefs

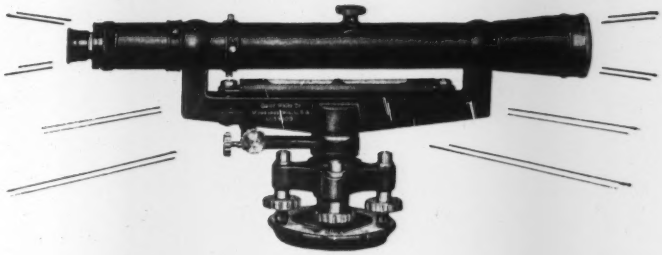
Underground parking—Early start of work is scheduled in Phoenix, Ariz., on a $2,394,046 underground parking garage and store building following approval by the National Production Authority (ENR, April 26, p. 61). Landrum-Mills Realty Co., promoters of the building, have leased the two story store to J. C. Penney Co. and the three-level underground garage to System Auto Parks & Garages, Inc., Los Angeles.

Water dividend—Discovery of an unsuspected source of water during a tunnel boring job on the $35,000,000 Cachuma water development project near Santa Barbara, Calif., will boost the water supply of that city and its neighbor, Montecito, long before the project itself is completed. Although the flow encountered during the boring of the 6.4-mi Tecolote tunnel totals only between 500 and 600 gpm, it will furnish desperately needed water to the two cities by July or August. At that time, 9.5 mi of conduit from the tunnel to the Santa Barbara city limits will be complete. E. R. Crocker, project manager for the Bureau of Reclamation believes that it may be possible to further tap the source when the tunnel itself is nearer completion. At the present time, the bore has been carried 9,500 ft from the outlet and 9,200 ft from the inlet. Part of the flow encountered has been stopped off.

Annual report—The Department of Public Works in Montclair, N. J., got out an illustrated offset-printed folder of six pages telling of its 1950 activities. Featured were its ten town-owned parking plazas; street and sewer improvements; street lighting; refuse collection; the traffic division; building regulation, and the water bureau.

Street and sewer loan—Mayor Hynes of Boston, Mass., has asked the city council to approve a loan order for $3,000,000 to cover street and sewer construction this year. About eight miles of main thoroughfares are included in the street program.

Bright lights not wanted—Plans of the Seattle, Wash., city engineering department for improvement of the city's street lighting system had included the installation of new mercury vapor lights on Crescent Drive, a five-block stretch between two arterial highways. However, home-owners living along the street have convinced the city council that the lights should not be installed. It is feared that they would attract more traffic to the street, with increasing hazard to children.



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Coated optics	YES	YES	YES
Covered Leveling Screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
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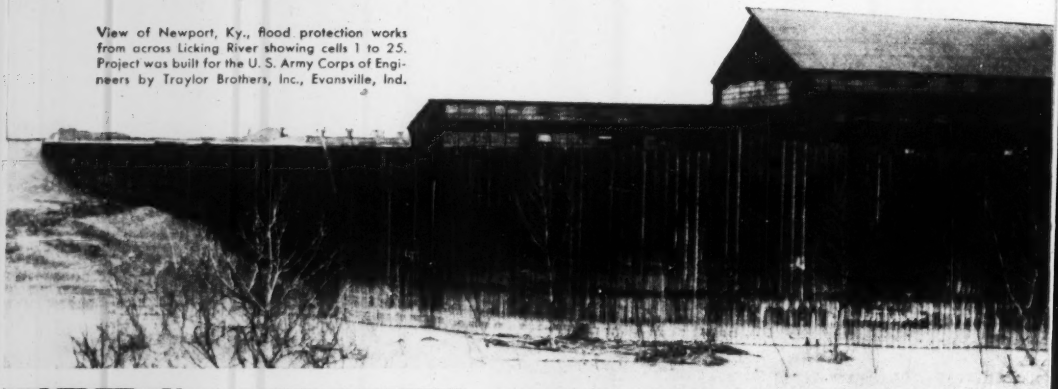
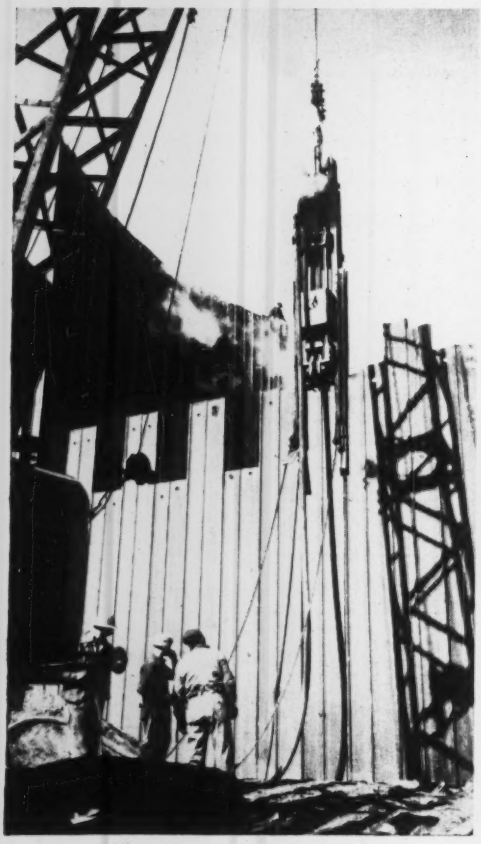
Floodwall of U·S·S Steel Sheet Piling

View of Newport, Ky., flood protection works from across Licking River showing cells 1 to 25. Project was built for the U. S. Army Corps of Engineers by Traylor Brothers, Inc., Evansville, Ind.

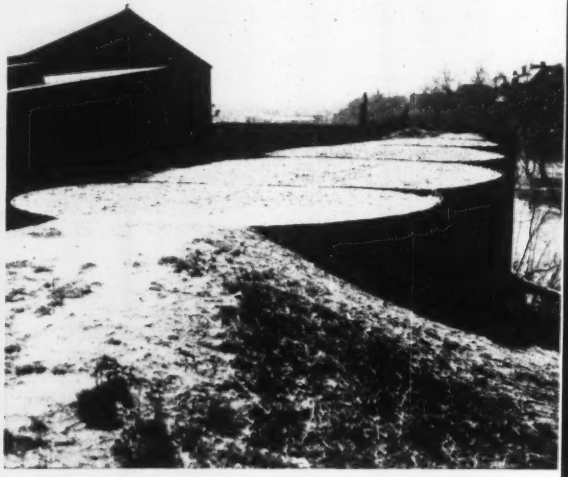


76 earth-filled cells solve

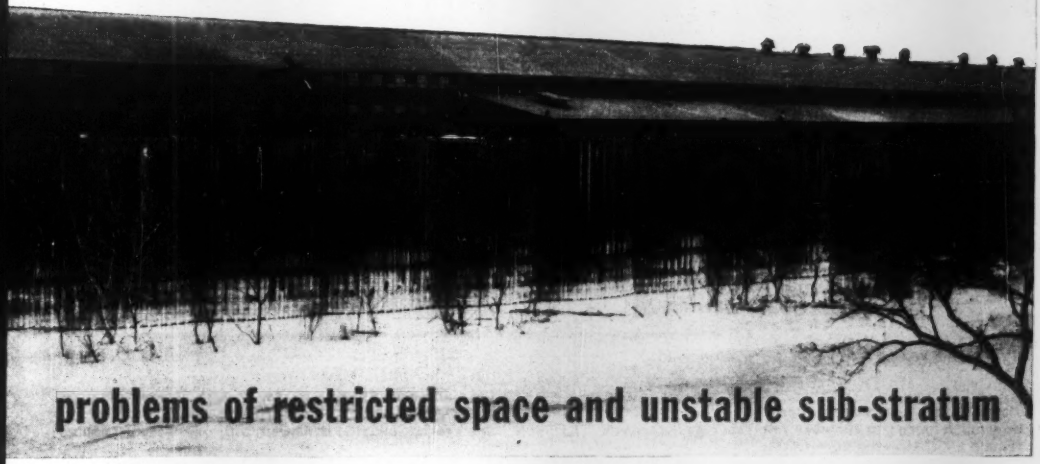


◀ U·S·S Steel Sheet Piling being driven into sand and gravel stratum, located approximately 55 feet below ground level. Piling used is MP-102 section.

▼ Completed earth-filled cells form flood protection works that guard Newport Rolling Mill, in background, against high waters in the Ohio River Flood Basin.



protects Newport Rolling Mill



problems of restricted space and unstable sub-stratum

● Interconnected earth-filled cells of U·S·S Steel Sheet Piling provide a highly satisfactory solution to the difficulties the U. S. Army Corps of Engineers faced in the construction of this floodwall on the Licking River at Newport, Ky.

The seven-block long Newport Rolling Mill occupied the logical site for conventional cellular-type construction. High, steep river banks with an unstable stratum of plastic blue clay and silt created conditions unsuitable for a concrete floodwall.

The structure, as completed, consists of 120° arcs of U·S·S Steel Sheet Piling connected by straight diaphragm walls of the same material. The piling in the landward arcs is 73 feet long, top being flush with existing ground surface. Riverward piling—93 feet long—extends to protection grade. A second series of cells have their landward arc 25 to 38 feet riverward of the landward arc of the main cells. They, too, extend to protection grade and, in combination with the riverward arc, form a second series of cells located atop the main cells.

12,309 tons of U·S·S Steel Sheet Piling are used in the 76 cells that make up this floodwall structure.

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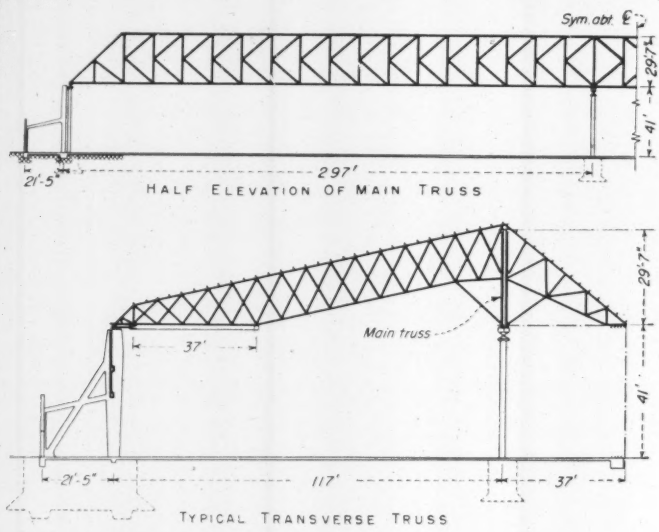


LONG-SPAN TRUSSES made possible 600x154-ft hangars with one interior column.

Hangars with long, clear door openings

Two airplane hangars with unobstructed door openings of almost 600 ft have been built in Spain—one near Madrid and one at Barajas.

The long openings were made possible by cantilevering steel trusses 37 ft beyond interior supports (see diagrams above).

There is only one column in the interior of the hangars, which are 600 ft long and 154 ft wide. That is due to the fact that at the front of the hangars the cantilever trusses are supported on K-type steel trusses with a span of 297 ft. These long-span trusses, having 16-ft long panels and a depth of 30 ft, are continuous over two spans.

At the rear of the hangars, each of the transverse trusses is carried on a concrete column. A 37-ft deep horizontal truss in the Barajas hangar transmits wind loads to two reinforced concrete frames.

The Barajas hangar was designed by Prof. E. Torroja. Details of the design are given in L'Ossature Metallique, No. 5, 1951, p 219.

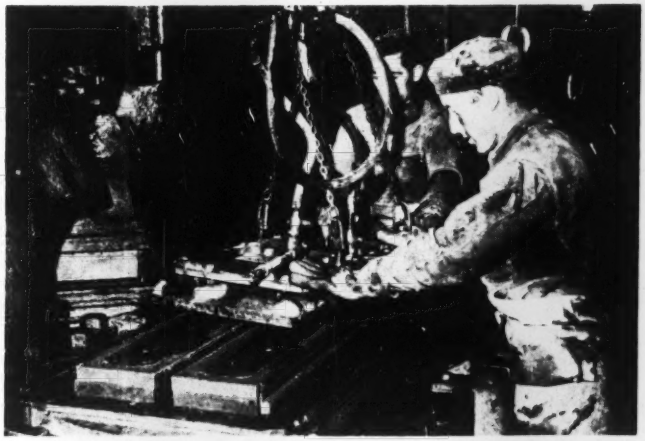
THE BUILDING PROCESS—Posts are placed in their proper positions and wedged. The units, already made to shape and tongued, are dropped into the grooved posts.

Waste materials become new British housing

The great hills of residue from the china clay industry of Cornwall, England, are now helping Great Britain's drive for more houses. This material is being made into blocks of fine concrete easily put together on the housing site.

The Cornish unit houses originally were intended to meet the shortage of houses for clay workers in Cornwall, but they proved so good and economical that they are now being erected in many other sections of England and Wales.

The traditional old Cornish building had substantial granite walls and



MAKING THE BLOCKS—Having mixed cement with the residue, the workmen place the material in steel molds and it is pressed into shape. The blocks are then lifted from the molds by suction—Eastern Pubs. photo.

a high degree of weather resistance. It was sturdy in appearance and fact. The new "synthetic" material competes with the old in quality and prices.

The sponsors are Selleck, Nicholls and Co., Ltd.

Foreign briefs

• **New Guinea hydro**—The Australian Department of Works and Housing is seeking bids for supply and installation of a hydro-electric plant at Port Moresby, New Guinea. The project, comprising intake works, a flume, and a generating plant for an output of about 5000 kw, will cost about $450,000. The Dutch cabinet has approved a government loan of $6,000,000 for a large-scale development program in Western New Guinea some miles away.

• **Million-dollar campus**—Institute Politecnico Nacional at Mexico City is planning a $1,000,000 campus. Five buildings will be completed this year, including one for engineering.

• **Egyptian dams**—Six foreign firms, most of them French, have asked the Egyptian Ministry of Public Works to set back the deadline for the opening of bids for the hydro-electric projects on the Aswan Dam, and this has been done—the new date to be early in the summer. In the meantime, plans are going ahead for a grandiose hydro-electric power project involving the building of a new dam at the Owen Falls, near one of the sources of the Nile in Uganda. Power will be produced from six successive waterfalls, making possible the production of 1,000,000 kw for Uganda, the Aglo-Egyptian Sudan, and Egypt.

• **Turkish airways**—A comprehensive aviation program in Turkey is to be aided by Marshall Plan dollars. Under one project a new airfield is being built at Esenboga to serve Ankara, and improvements are to be made on an existing airstrip at Adana, which is an alternate stop on international air routes in the Middle East.

• **India needs good roads**—Lack of roads is contributing to India's food shortage. Agricultural officials agree that food production would increase largely if lands were made more accessible. M. N. Dalal, past president of the Indian Roads and Transport Development Association, says that it is the acute shortage of cheap transportation that is the root cause of the Indian peasant's troubles.

• **U. S. help for Far East**—The broad scope and increasing tempo of the U. S. economic and technical aid to the Far East and Southeast Asia is shown by the ECA's recent announcement of $2,421,000 in purchase authorizations to provide a wide range of commodities for Formosa, Burma, Indo-China, Thailand, and the Philippines.

Marshall Plan dollar allotments for the first 11 months of the current fiscal year added up to a total of $2,183,720,000.

• **Reclamation mission to Nicaragua**—A 6-man Bureau of Reclamation mis-

DARAKOTE
anti-stripping additive

makes it possible for liquid bituminous materials to adhere to wet, moist or dry aggregates . . . prevents stripping under adverse conditions of moisture and low temperature.

DARAKOTE actually displaces water, permanently binds asphalt to the aggregate and to the road surface.

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With ***DARAKOTE,*** surface treatment goes on uninterrupted, rain or shine, no matter if aggregate and old road surface are drenched, damp, or bone dry.

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With ***DARAKOTE,*** less blading and mixing is required — often aerating and drying out windrows is accomplished in half the time. Demurrage and standby time is reduced.

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DARAKOTE adds working days to your paving season. Asphalt maintenance and paving programs continue as scheduled, costly delays are eliminated.

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DARAKOTE is more effective at all working temperatures. It retains its effectiveness under heat, will not settle out or deteriorate in processing, storage, or use.

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Chemical Company

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San Leandro, Calif. Montreal 32

New "Packaged Unit" designed for aggregates, coal, coke, ores and other bulk materials

Equally applicable for both small or large scale operations, the new Hewitt-Robins Sectional Belt Conveyor is a packaged unit that can be assembled by your own workmen—and in considerably less time than required for conventional type conveyors.

From the variety of truss sections, head sections and A-frame supports you can select a conveyor system suited to your needs—in length, height, belt width and capacity. And, when you change locations, the conveyor can be disassembled, with sections added or dropped to suit conditions at the new site.

Like all Hewitt-Robins machinery, this new Sectional Belt Conveyor is carefully designed, strongly constructed. It is equipped with world-famous Robins Troughing and Return Idlers with one-shot lubrication. Curved decking protects the return strand of the belt.

And remember, only Hewitt-Robins is able to take single, unified responsibility for a successful Belt Conveyor installation—machinery and belting. For complete information on the new Hewitt-Robins Sectional Belt Conveyor, write today for Bulletin No. 132. Address Robins Conveyors Division, 270 Passaic Avenue, Passaic, N. J.

* * *

HEWITT-ROBINS SECTIONAL BELT CONVEYOR

HEAD SECTIONS—3 types of drives to take motors from 2 hp to over 40 hp. Terminal pulleys (both head and tail) are solid welded steel with cast iron hubs.

TRUSS SECTIONS—2 designs—24" deep in lengths of 6'6", 15'6", 18'6", and 21'6"; 42" deep for greater spans. Side members all-welded construction; diagonal bracing members have jig-drilled holes for quick field assembly.

BENT SUPPORTS—A-frames are available in complete range from 4' to 50' deep—easily erected.

BELT WIDTHS—18", 24", 30" and 36". Lengths up to belt limitation.

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BELT CONVEYORS

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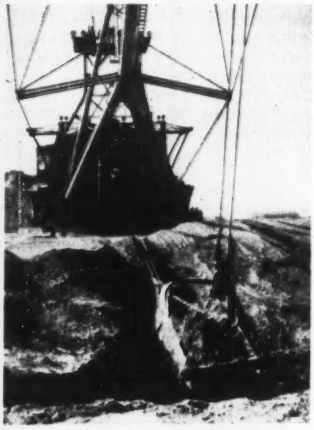
sion has gone to Nicaragua to assist the Ministry of Development and Public Works with a preliminary investigation of irrigation, hydro-electric power and geothermal power possibilities in that country. Chief of the mission is Robert J. Newell, former bureau regional director in Boise, Idaho, who has had 48 years of engineering experience.

• **Israel needs investments**—According to the Jewish Agency for Palestine, new investments in basic and secondary building materials industries in Israel totalling $10,000,000 are needed to cope with the great building boom there caused by the immigration of 600,000 during the last three years, and the expected immigration of as many more in the next three years. Required especially are cement plants, lime kilns, quarries, clay and silicate bricks, roof and floor tiles, prestressed cement blocks and bricks. Many technicians are also needed.

• **Large Venezuelan project**—The Orinoco Mining Co. of Caracas, Venezuela, a subsidiary of the U. S. Steel Co., plans construction of a harbor, a 55-mile railway, an airfield, and to dredge the Orinoco River, all in the state of Bolivar. Housing is also planned. The estimated expenditure is $250,000,000.



RUSSIAN STYLE—A Russian-made walking dragline, reported to be working on the Volga-Don Canal project in southern Russia, features an unusual, 210-ft long tubular steel boom, root of which is shown above. According to Russian sources, the machine—made by the Urals Heavy Machinery Works, weighs 1,100 tons, carries an 18.3 cu yd bucket, and can move 10,460 cu yd of earth in an eight-hour shift. (Sovfoto)

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NO MATTER what you haul, or where you haul it, there's a Fruehauf Trailer designed for the job. In the construction field, where requirements are sometimes out-of-the-ordinary, it takes specially designed and quality engineered equipment to meet your needs. Here Fruehauf stands out again because specialized Trailers are built as *Standard Units.*

For example, there are four lines of flat bed and stake and rack Trailers available for your hauling needs. Each is designed for a specific need, yet are versatile hauling partners anywhere.

In addition, there are virtually unlimited variations of the 20 other Fruehauf Standard Trailer types to meet special requirements.

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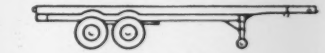
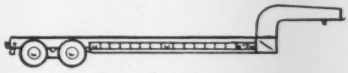
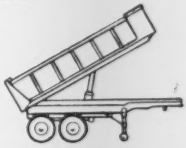


FLAT-BED TRAILER

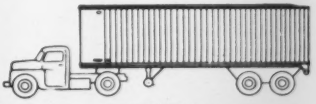


CARRYALL TRAILER

BULK CEMENT TRAILER



DUMP TRAILER



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FRUEHAUF Trailers

WORLD'S LARGEST BUILDERS OF TRUCK-TRAILERS

MEN AND JOBS

New Appointments

Highway departments

John I. Cahalan is acting general manager of the Delaware River Memorial Bridge.

R. A. Haber is chief of Delaware highways.

G. R. Champion has been appointed division construction engineer 3d Div. Tennessee highways, Nashville.

H. D. Long is now state construction engineer, Tennessee Dept. of Highways & Public Works.

Government Agencies

Brig. Geoffrey Walsh, civil engineer is now commander of Canada's new 27th Brigade.

Appointed to the new Power Development Div. of the Quebec Hydro-Electric Commission are: **M. V. Sauer,** consulting engineer; **C. G. Kingsmill,** chief engineer; **C. H. Pigot,** hydraulic engineer; **H. L. Abbott,** chief designing engineer; and **F. Rousseau,** general superintending engineer of construction.

Recent engineering appointments at the Oak Ridge National Laboratory, operated by Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corp. include: **Edward S. Bettis,** principal development engineer; **D. C. Hamilton, Jr.,** senior development engineer; **J. J. Stone, Jr., J. G. Morgan** and **Dunlap Scott,** development engineers; **F. P. Green, L. C. Oakes, M. G. Kitchen,** and **M. A. Schwartz,** associate development engineers; **Janet M. Cisar,** junior development engineer; **John Y. Estabrook,** senior design engineer.

State, city and county

Clark M. Kee has been named engineer and maintenance director of the Hawaii Aeronautics Commission, succeeding **Glenn T. Belcher,** resigned.

Clarence J. Rohde is named assistant civil engineer of Whitefish Bay, Wis.

Corps of Engineers

Col. A. H. Davidson has been named N. Y. Dist. engineer, succeeding Col. E. P. Ketchum.

Col. C. K. Harding is now South Atlantic Div. engineer at Atlanta, Ga., succeeding Col. B. L. Robinson, now D. C. engineer commissioner.

Lt. Col. F. E. Ressegieu is St. Louis Dist. engineer.

Col. Geo. Kumpe succeeds Col. David A. Morris as Milwaukee Dist. engineer.

Resignations

Harold J. Vokoun, head of the Lake County water department and chief sanitary engineer at Painesville, Ohio, has resigned to become an assistant sanitary engineer in the Bureau of Indian Affairs of the Dept. of Interior in Washington, D. C.

Eugene P. Molloy, civil engineer with the Nashua, N. H., Board of Public Works, has resigned to become assistant U. S. safety engineer, North Atlantic division, with headquarters in New York City.

Retirements

O. F. Goetz, state construction engineer, Tennessee highways, 32 years.

Rear Adm. K. T. Adams, asst. director of the Coast and Geodetic Survey, after 39 years.

Guy E. Wiley, chief architect, public school system, Milwaukee, Wis. after 27 years.

Geo. L. Freeman has retired from Moran, Proctor, Freeman & Mueser, consulting engineer, New York City, to continue as a consultant for the company.

Leon Small, water engineer of Baltimore, Md., for last 20 years—40 years service in the bureau of water supply.

John S. Crandell, professor of highway engineering, University of Illinois—25 years on faculty of that institution.

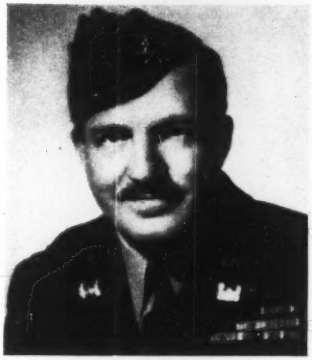
Honors

Lester S. Corey, president, Utah Construction Co., San Francisco, and **Lloyd H. Yeager,** general manager of the Gypsum Association, Chicago, received certificates recently from the American Standards Association in recognition of their work in the development of American standards.

H. C. Perkins is the new state highway engineer for Arizona. A veteran of 27 years in various engineering capacities with the department, he replaces W. C. Lefebvre who resigned to become Postmaster at Phoenix. Perkins was deputy engineer at the time of his promotion. He has played a leading role in the designing and planning of Arizona highways for a number of years.

Gerald Wilson, who studied engineering at Haverford College and architecture at Columbia, has been appointed sales engineer of The Thompson-Starrett Co., Inc., general contractors and builders of New York, Boston, Philadelphia and Washington. He has had 27 years experience in construction and management engineering with H. K. Ferguson Co., Ford, Bacon & Davis, Inc. and as head of his own firm.

Oscar G. Boden, construction engineer for the Bureau of Reclamation at Tracy, Calif., is congratulated on his 40th anniversary, as bureau engineer, by Miss Marilyn Hanson, first feminine employee to work for him. Ranked among the world's foremost canal builders, Mr. Boden now directs construction of three major features of California's Central Valley Project, the Delta Cross Channel, Tracy Pumping Plant, and Delta-Mendota Canal. An engineering graduate of Iowa State College, 1910, Mr. Boden has constructed irrigation canals and distribution systems on the North Platte Project in Nebraska, Riverton Project in Wyoming, the Yakima Project in Washington, and the Owhee Project in Oregon.



COMMANDS ENGINEER BRIGADE—Gaetan M. Zucco, newly appointed contracting manager for Bethlehem Pacific, Los Angeles, has been granted a leave-of-absence for active duty with the U. S. Army Corps of Engineers. Before his transfer to the Los Angeles district, he was contracting manager for the company in the Northwest. Colonel Zucco will command at Fort Leonard Wood, Mo., the 498th Engineer Aviation Brigade, this being the same reserve unit he has commanded since its activation, sponsored by the Mountain Pacific Chapter of the Associated General Contractors of America.

PROJECT PLANNER—Vaud E. Larson has been appointed head of the Bureau of Reclamation's Region 3 Branch of Project Planning, succeeding E. G. Nielsen, assistant to the regional director. Larson has been in charge of the Phoenix, Ariz., investigations office since December, 1944. He will supervise the investigations in southern California, southern Nevada, most of Arizona, and areas in southern Utah and western New Mexico. Chief projects now under study are the Central Arizona, Marble Canyon Dam, Glen Canyon Dam, Palo Verde Valley diversion, and a second barrel of the San Diego aqueduct.

Give Him a Power Saw He'll Like

Here's a fast, heavy-duty saw designed especially for the kind of hard use customary on heavy building construction. Its easy cutting action through heavy lumber makes a hit with operators every time. The famous Stanley nameplate is recognized and respected the world over.

The Stanley W9 Safety Saw cuts through the toughest wood in any thickness up to $3\frac{1}{4}$". Heavy-duty gears in large grease chamber assure continuous, smooth operation in any position. Precision ball bearings throughout. Simple, secure adjustments for depth-of-cut and beveling angles from 90° to 45°. Telescopic safety guard protects operator from cutting edge of blade. Supplied with sturdy metal carrying case and ripping gauge.

See the W9 Saw at your tool distributor's or write for detailed literature on the W9 or other Stanley Saws, to Stanley Electric Tools, 438 Myrtle St., New Britain, Conn.

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CONCRETE PAVEMENTS
carry heaviest traffic at lowest maintenance cost

OFFICIAL records of 28 State Highway Departments demonstrate a fact of utmost importance to highway engineers, state and county officials and taxpayers: ***Concrete costs less to maintain than any other type of pavement.***

The records cover 223,976.2 miles of highways in every state reporting maintenance figures by type of surface. Maintenance cost data average 13 consecutive years.

They show that it costs an average of only $123.77 per mile per year to maintain concrete pavement, and $158.52 for the pavement with the next lowest maintenance cost. Of the 12 types of pavements covered by these records the highest maintenance cost was $476.50.

Concrete's low maintenance cost is significant because concrete highways usually carry the largest volume of heavy vehicles.

Low maintenance cost is only one of concrete's advantages. It also:

1. Is safer. At night concrete reflects the most light, thus increasing visibility. Night or day, wet or dry, concrete's gritty texture affords uniformly high skid resistance.
2. Usually costs less to build than other pavements of equal load-carrying capacity.
3. Renders more years of uninterrupted service.
4. Keeps driving costs low by saving on gas, tires and vehicle repairs.

For more details about pavement surface maintenance costs write for a free copy of *"Road Surface Maintenance Costs from 28 States,"* distributed only in the United States and Canada.

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A national organization to improve and extend the uses of portland cement and concrete
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★ If you want to know how good Adams Motor Graders actually are, just watch them do their stuff on really rough, tough jobs—the kind where brute strength and stamina, massive power and traction and high-speed flexibility are "must" requirements.

On big dam projects, for example, like the one above, Adams Motor Graders frequently work the clock around—cutting and spreading huge masses of tough, hard-to-manage material, building haul roads and then keeping them in fast travel condition for great fleets of heavy earth-moving equipment.

Whatever grading operations your work involves—from deep ditch cutting to high bank sloping—you'll find Adams Motor Graders have what it takes to do the job in fastest time, at lowest cost. No other machines handle so many jobs, so fast, so well—scarifying, sub-grading, fine finishing, mixing, back-filling, etc.

Ask your local Adams dealer for complete information on these great machines—or write for illustrated literature.

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Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds**... Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
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- **Fast, Easy, Servicing Plus World-Wide Dealer Service** . . . Saves time and money.

Make your next motor grader an

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• Stretch your pile-driving dollar! Put Super-Vulcan — mightiest of all pile hammers—on the job. Get twice the regular number of smashing blows per minute on 25 to 35 per cent less steam. Drive more piles per dollar, pocket substantial costs savings.

This powerful hammer combines simple design, compactness and long-time durability to give you greater operating economy. Piles go down faster, easier, and at less cost than you ever imagined. Remember, Super-Vulcan saves three important ways—on time, maintenance and motive power costs.

Get set with this dependable, money-saving pile driver. Write for full details today.

Sizes 18C-30C-50C-80C meet all needs.

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EDUCATION, RESEARCH

Hydrodynamics symposium launches MIT laboratory

Massachusetts Institute of Technology dedicated its $600,000 hydrodynamics laboratory and ship towing tank June 4 and took the occasion to call together some 200 scientists for a 3-day session on hydrodynamics in modern technology.

T. C. Desmond, MIT '09, told an audience representing education, government and industry he was "delighted we can provide a laboratory as an excuse for getting you here." Then Karl T. Compton, chairman of the MIT corporation, discussed engineering manpower trends (ENR June 14, p 25) and emphasized that the most important contribution of the new laboratory is the young hydrodynamicists it will produce.

President James R. Killian, accepting the new facility at dedication ceremonies earlier in the day, said it was the first item on the institute's $20,000,000 development program. He explained that this laboratory had been a pilot project in the asking of industry's financial aid and pointed out that the result has been collection of $7,000,000 (35% of the total development fund) from industrial corporations.

• **Good use of space**—Modern instrumentation has fostered compactness and has brought the research equipment of hydrodynamics and naval architecture out of the leviathan scale of the past, said Killian, in recalling the long years MIT has waited for its new laboratory.

Research and instruction use of the facility will break across departmental lines. Operation will be by the department of civil and sanitary engineering; the department of naval architecture and marine engineering will participate; and other departments may also make use of it. Arthur T. Ippen, professor of hydraulics, is director of the laboratory.

Laboratory work space is a clear 50x100-ft room of two-story height housing hydraulic equipment through which water can be circulated at a rate of 15,000 gpm from a 15,000 cu ft concrete reservoir in the basement. Also in the basement is the 108-ft ship towing tank, 8 ft 7 in wide and 4 ft deep.

Facilities on the main floor include equipment for study of open channel flow, spillway sections, wave characteristics, unsteady flow in water tunnels, oxygen absorption of deaerated water, electric analogy and supersonic air flow analogy.

• **Symposium subjects**—Sessions on hydrodynamics in industry, public works, national defense and naval architecture drew an impressive array of speakers: B. E. Smith, president of S. Morgan Smith Company, led industry's session; Boris A. Bakhmeteff of Columbia University presided over the public works meeting; Maj. Gen. Lewis A. Pick, chief of engineers, was on the national defense program.

One whole day was devoted to talk of hydrodynamics research at MIT. Professor Ippen put the purpose of the meeting in a nutshell, saying, "It is our hope that the new hydrodynamics laboratory will take its place of service to industry and public agencies. . . ."

Government issues book on scientific research

Scientific research in engineering schools of the country and the part these schools are playing in training scientific manpower are the subjects of a new book entitled "Review of Current Research."

Published by the Engineering College Research Council of the American Society for Engineering Education, the review outlines policies and activities of engineering research in the 91 colleges and universities holding membership in E.C.R.C. The volume also shows for each school the names of responsible research administrative officers, the number of personnel engaged in research activities, the annual expenditures, and special conferences and short courses of interest to research workers.

In all more than 5,200 engineering research projects, representing annual expenditures of over $50,000,000 are now under way in the engineering schools of American colleges and universities; the research projects listed represent the work of more than 11,500 faculty members, graduate students, and research engineers. Listings of projects and personnel are complete as of March 1, 1951.

The book, which sells for $2.25 per copy, may be ordered from Office of Technical Services, U.S. Department of Commerce, Washington, 25, D. C. The order should be accompanied by check or money order payable to the Treasurer of U.S.

(Continued on page 67)

WHY A WHOLESALER?

A wholesaler is an indispensable factor in your welfare. He is the liaison between you, the buyer, and the manufacturer.

He serves as the local source for products which you can use to advantage, and brings them within your convenient reach. He can help you with installation problems; and questions put to him could be more quickly answered than would be possible if you went to the manufacturers direct. You can always go to him to obtain valuable information about the products you buy.

And of course, along with his constant endeavor to maintain complete stock assortments of kinds and sizes of his *regular* products, he is always abreast of the news and ever alert to any *new* developments and products that he thinks may bring you benefits.

Select a good wholesaler—and stick with him. He is in a most advantageous position to help you.

And in buying tube, select a good one—such as Wolverine—and stick to it. It's the quality-controlled tube that will deliver exceptional service.

WOLVERINE TUBE DIVISION, Calumet & Hecla Consolidated Copper Company, Incorporated, *Manufacturers of seamless, nonferrous tubing,* 1457 Central Ave., Detroit 9, Mich. Plants in Detroit, Mich. and Decatur, Ala.

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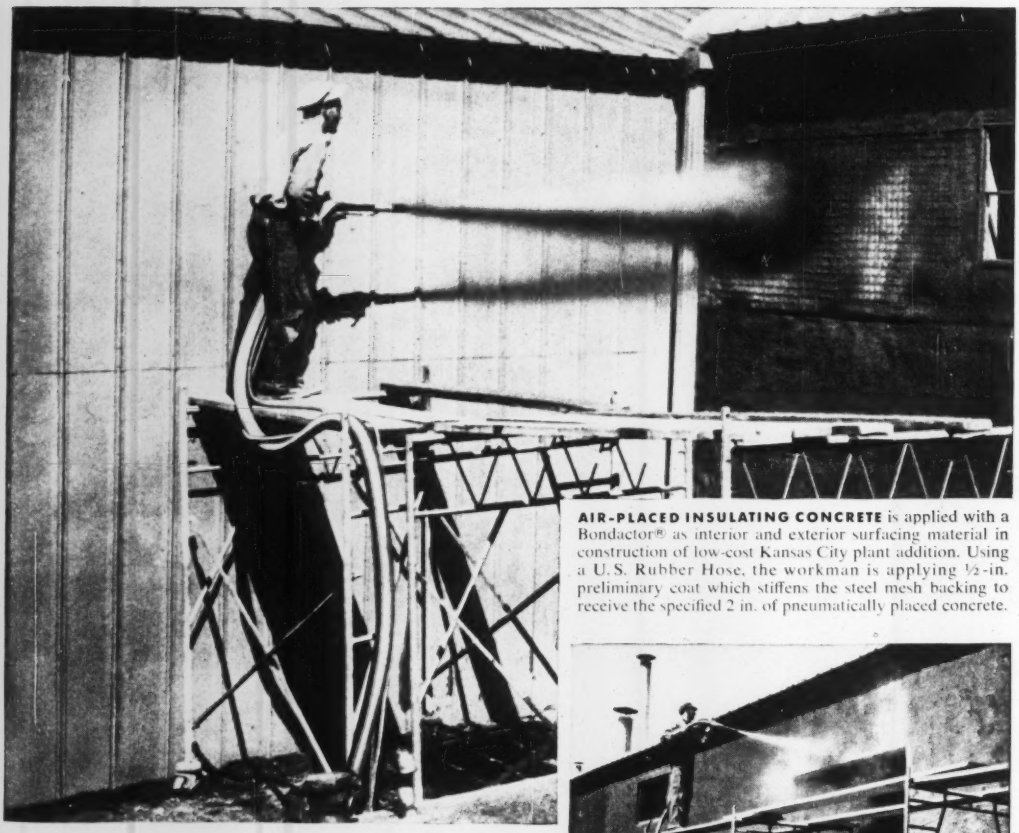
What's U. S. Rubber doing to aid low-cost building?



AIR-PLACED INSULATING CONCRETE is applied with a Bondactor® as interior and exterior surfacing material in construction of low-cost Kansas City plant addition. Using a U.S. Rubber Hose, the workman is applying ½-in. preliminary coat which stiffens the steel mesh backing to receive the specified 2 in. of pneumatically placed concrete.

ADDITIONAL INSULATING CONCRETE being blown on. The operator can control the thickness of the application to very close tolerances. Later a final ½-inch coating of sand and cement concrete is applied, to make a hard surface coating.

A new, fast construction method is now being used by contractors. Concrete walls are literally blown into place, saving valuable time and materials. The pneumatic process uses Cement Placement Hose specially developed by U.S. Rubber to stand up under the high pressures and the abrasive action of dry pre-mixed sand and cement aggregate.

U.S. Rubber hose experts have helped many a contractor and manufacturer to lower his operating costs, speed up movement, increase production. They may be able to help you. Write to address below.

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Mellon Institute bearish on abating mine wastes

Neutralization of acid wastes from coal mines is not practical or feasible according to a report made to the Pennsylvania Sanitary Water Board, State Department of Health, by the Mellon Institute of Industrial Research, University of Pittsburgh. The institute is conducting research for the board into methods of abating pollution from those wastes (ENR Sept. 21, 1950, p. 41).

Pilot plant study of the neutralization phase of possible treatment has determined that "although acid mine drainage can be chemically treated with lime or other alkalies to neutralize the acid, such a method is not practical or feasible because of the economic and other factors involved."

The report also states: (1) use of limestone or hydrated lime to neutralize acid produces hard water; (2) a neutralizing treatment would be effective only if the plant were designed and staffed to treat the maximum seasonal flows and the sudden large fluctuations caused by natural conditions; (3) after completion of the mining, continuation of the treatment indefinitely would be required.

On the last point, the report says "It is not believed that any operator would open a mine if required to treat the acid drainage as long as it might be produced. Many mines under observation today, still producing acid mine water, have been abandoned for 25 years or more."

Further, it seems that the only hope of preventing flow of acid drainage from mines is by (1) stopping formation of acid from sulfuric material on the walls and roof; (2) causing water to leave the mine by the shortest possible route and in the quickest possible time without leaching the acid substances from the walls and roof; or (3) diverting all water from the mine.

Research into the prevention of the formation of acid is being continued.

Water draining from bituminous coal mines in Western Pennsylvania nearly always contains sulfuric acid. This acid is formed by the oxidation of the sulfur occurring in the coal and in the rock and clay found above and below the coal seams. The sulfur is in part combined with the coal, but more of it is a sulfide of iron (iron pyrites, "fool's gold"). In the presence of water, and under the influence of oxygen in the air of the mine, the sulfur is oxidized and, still combined with irons, dissolves in the water as copperas—more properly, ferrous sulfate.

Canada's First Subway

Photo courtesy of Atlas Polar Company Limited, Toronto

WAUKESHA POWER
Pushes Toronto's
New Rapid Transit

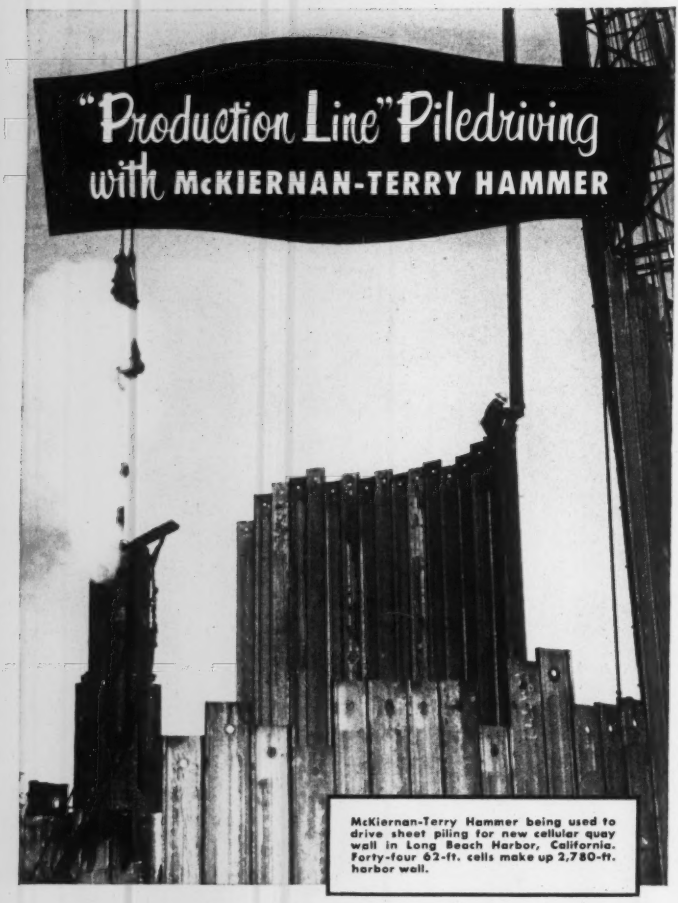
● A hole in the ground today—Canada's first subway tomorrow! Because Waukeshas are at work—here at Yonge and Front Streets, where the contractors—Pitts, Johnson, Drake & Perini; and Rayner Construction Company—are building Toronto's rapid transit subway.

You'll find Lorain Moto-Cranes and shovels, Canadian Ingersoll-Rand Compressors, and other power machines—with Waukesha Engines. Actual count showed that more than half of the engines powering construction equipment on the job at the time were Waukesha Engines. Many of the trucks hauling earth from the excavation had Waukesha Engines, too.

Contractors everywhere prefer Waukesha power—for all-around dependability . . . for quick, lively response . . . for speed and smoothness . . . for extra power in the pinches . . . for high fuel economy and low upkeep expense. Waukesha Engines and Power Units—gasoline, Diesel, propane fueled—range from 10 hp to 500 hp. Send for Bulletin 1408. 128

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS., NEW YORK, TULSA, LOS ANGELES

WAUKESHA POWER



McKiernan-Terry Hammer being used to drive sheet piling for new cellular quay wall in Long Beach Harbor, California. Forty-four 62-ft. cells make up 2,780-ft. harbor wall.

The contractor, Guy F. Atkinson Company, put pile driving on a production basis in handling this Long Beach Harbor project. Every blow of the powerful McKiernan-Terry No. 9-B-3 Double-Acting Hammer drove two sheets at once. The hammer was held on the sheet piling by four long fingers that extended down from the hammer on each side of the piles. Quick orientation of hammer on sheeting was accomplished by using a tagline to timber which was wedged through a lifting staple at the top. In addition, a McKiernan-Terry No. 6 Double-Acting Hammer was used in the original stringing of the piles before driving. Again fast-acting McKiernan-Terry equipment paid off in speed and accuracy. You can depend on McKiernan-Terry Single-Acting and Double-Acting Hammers and Double-Acting Extractors for every pile driving need. Bulletin gives data on 17 sizes. Write for your copy.

GRAB BUCKETS

TRANSFER BRIDGES

COAL TOWERS

HONING TO 42"/1 D

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION, MANUFACTURING ENGINEERS, 13 PARK ROW, NEW YORK 38, N.Y.
Plants: Harrison, N.J. and Dover, N.J.

MK-301

MEETINGS

The Private Practice section of the Ohio Society of Professional Engineers has elected the following officers. Carl C. Walker, Columbus, chairman; Paul F. Dumond, Lancaster, secretary-treasurer; Bruce W. Weaver, Warren, vice-chairman of the Northeast District; Walter W. Graf, Lancaster, vice-chairman of the South East District; Louis W. Graf, Cincinnati, vice-chairman of the South West District; and Thomas B. Henry, Toledo, vice-chairman of North West District.

The Highway Group of the Ohio Society of Professional Engineers has elected Harold L. Krauser, Chillicothe, as chairman; Joseph M. Unger, Columbus, first vice-chairman; John J. Coughlin, Columbus, second vice-chairman; A. J. Friedmoth, third vice-chairman; Orville W. Gruebmeyer, Sidney, fourth vice-chairman; and Edward T. Halbedel, Upper Sandusky, secy. treas.

Harry Gellin has been elected 1st vice-president of the Cleveland Engineering Society. Other officers: President, Benjamin A. Smith, 2nd vice-president, Chet W. Rupert; treasurer, Max B. Robinson; and executive secretary, Mary C. Manwell.

New officers of the N. Y. Building Congress are: Louis Skidmore, president; C. G. Dandrow, R. A. Jacobs, A. E. McKenzie, Howard McSpedon, and Harold Sleeper, vice-presidents; H. C. Turner, Jr., treasurer; Vernon Jarboe, secretary; and chairman of the finance committee, O. L. Nelson.

Marcel M. Fertig has been elected president of the Pittsburgh chapter of the Pennsylvania Society of Professional Engineers. Others elected were: Vice-presidents, Carl Long and Glenn M. Comstock; directors, L. M. Laushey and T. F. Rockwell; Chapter State Director, J. W. Graham, Jr.; and Alternate State Director, B. H. Aires.

The program for the 1951 Oak Ridge Summer Symposium on "The Role of Engineering in Nuclear Energy Development" has been completed. The symposium will be held at Oak Ridge, Tenn., from Aug. 27 to Sept. 7. This will be the third annual Oak Ridge Summer Symposium sponsored by the Oak Ridge National Laboratory and the Oak Ridge Institute of Nuclear Studies. The symposium is being devoted to engineering this year at the request of the American Society for Engineering Education. Sessions will be unclassified in nature and will be

(*Continued on page 73*)

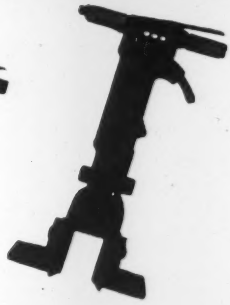
30 POUND
PAVING BREAKER
Model 17

60 POUND
PAVING BREAKER
Model 23

70 POUND
PAVING BREAKER
Model 24

80 POUND
PAVING BREAKER
Model 25

SPIKE DRIVERS
All Sizes



SHEETING DRIVER
Model 25S

Standard Duty
BACKFILL TAMPER
Model 55T

Heavy Duty
BACKFILL TAMPER
Model 66T

Light Weight
CLAY DIGGER
Model 412

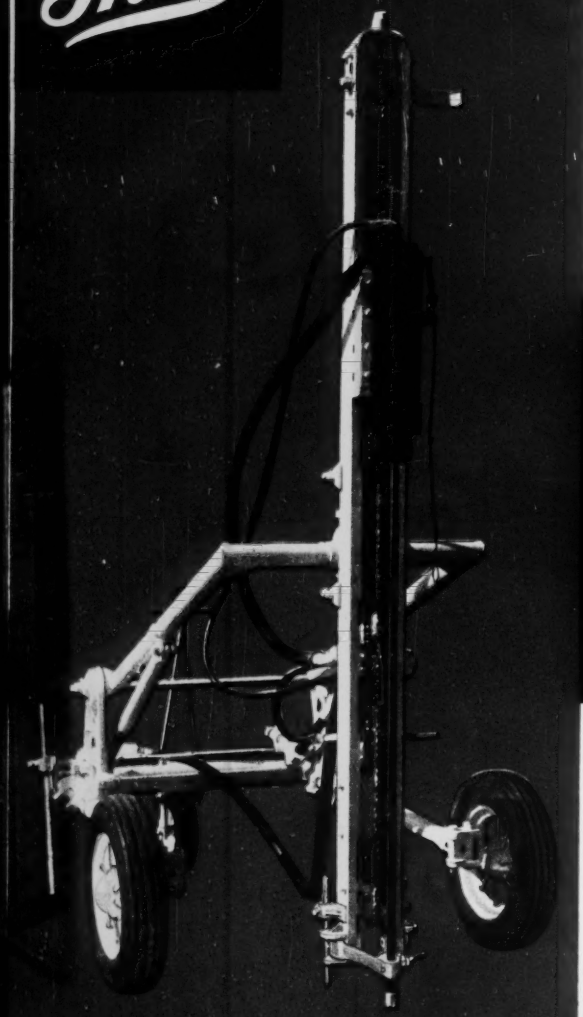
Heavy Duty
CLAY DIGGER
Model 18

Light Weight
TRENCH DIGGER
Model 412T

Heavy Duty
TRENCH DIGGER
Model 19

Thor PORTABLE POWER TOOLS

Thor



SUMP PUMPS
Two Models
Up to 160 Foot Heads

PIN DRIVER
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30 POUND SINKER
Model 28

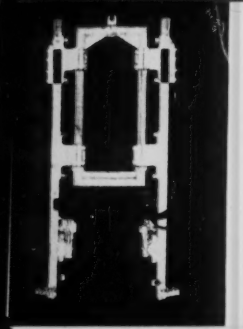
35 POUND SINKER
Two Models

45 POUND SINKER
Model 38

POWER FEED DRIFTER MOUNTING

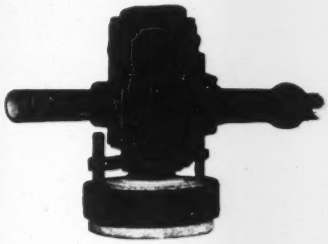
3" AND 3½" DRIFTERS

AIR BAR FEED
Converts Drifters and Sinkers to Power Feed Drifting



Here's Thor POWER — in the Thor Model 105 drifter, most powerful rock drill in the Thor line — mounted on a wagon rig that's designed for operation at all angles . . . equipped to feed and return rapidly, or as slow as two inches per minute! Tandem Mast Mounting (left) for pipe line drilling.

PNEUMATIC CONCRETE VIBRATOR
Model 521



CONCRETE GRINDERS
Four Models

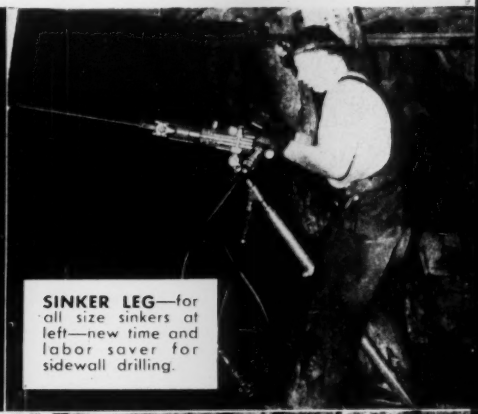
CEMENT CHIPPING HAMMERS
Five Sizes

NAIL DRIVERS
Five Sizes

55 POUND SINKER
Model 72

55 POUND SINKER
Model 75

80 POUND SINKER
Model 85B



SINKER LEG—for all size sinkers at left—new time and labor saver for sidewall drilling.

STOPERS
Six Sizes

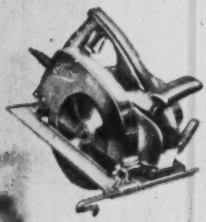
STOPER LEG
Converts Sinkers To Stopers

AIR COLUMNS
For Faster Drifter and Stoper Setups

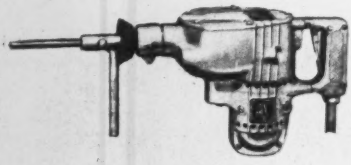
EARTH BORING TOOLS—For [illegible] drills for driving augers in [illegible] in laying of gas and water lines, [illegible] conduit and cable, [illegible] [illegible] alleys, driveways, [illegible] [illegible] or down-hole [illegible] [illegible] trenches, etc.

Thor CONTRACTORS TOOLS

ELECTRIC

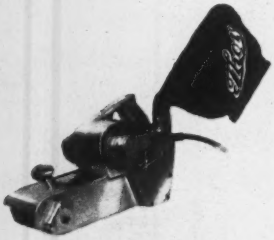


SAWS

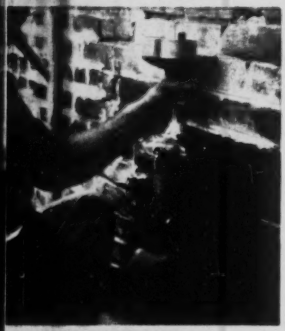


HAMMERS

IMPACT WRENCHES

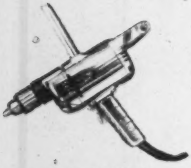


BELT SANDERS



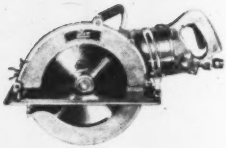
TUCK POINTING GRINDER

GRINDERS AND SANDERS



DRILLS AND DRILL STANDS

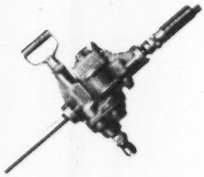
PNEUMATIC



SAWS

IMPACT WRENCHES

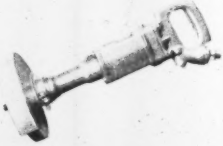
DRILLS



WOOD BORERS

RIVETING HAMMERS

RIVET BUSTERS



GRINDERS

WELD FLUX SCALING HAMMERS

INDEPENDENT PNEUMATIC TOOL COMPANY

AURORA • ILLINOIS

held in the downtown portion of Oak Ridge. They are open to all interested professional engineers and others. A few of the subjects and speakers are: Standards of Radiological Protection and Control, by Karl Z. Morgan, Director, Health Physics Division, Oak Ridge National Laboratory; Environmental Problems of Radioactive Waste Materials, by R. J. Morton, Health Physics Division, Oak Ridge National Laboratory; The Treatment of Radioactive Wastes, by Warren K. Eister, Chemical Technology Division, Oak Ridge National Laboratory; The Materials of Reactor Construction, by G. E. Evans, Physics Division, Oak Ridge National Laboratory.

National construction problems were discussed at the recent annual meeting of Vermiculite Institute held in Fort Lauderdale, Fla. Guest speaker Eric W. Hammarstrom, Chief, Non-Metallic Building Materials Branch, National Production Administration, forecast an important role for vermiculite in defense construction. "Vermiculite as an insulation and as an aggregate replacing sand in lightweight concrete and plaster will greatly relieve the shortage of critical construction materials," Hammarstrom asserted. Gerald R. Stark of Texas Vermiculite Co., Austin was elected president, succeeding Stanley K. Robinson of F. Hyde & Co., Montreal, Canada. J. B. Lyall of Vermiculite-Northwest, Inc., Spokane, was elected a director.

CALENDAR

Western Association of State Highway Officials, Fairmont Hotel, San Francisco, Calif., June 25-28.

The American Society for Engineering Education, Michigan State College, East Lansing, Mich., June 25-29.

National Constructors Association, Labor and Executive committees, Edgewater Beach Hotel, Chicago, Ill., July 11-12.

Bureau of Reclamation, annual programming conference, Wenatchee, Wash., July 23-27.

National Conference on Prestressed Concrete, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 14-16.

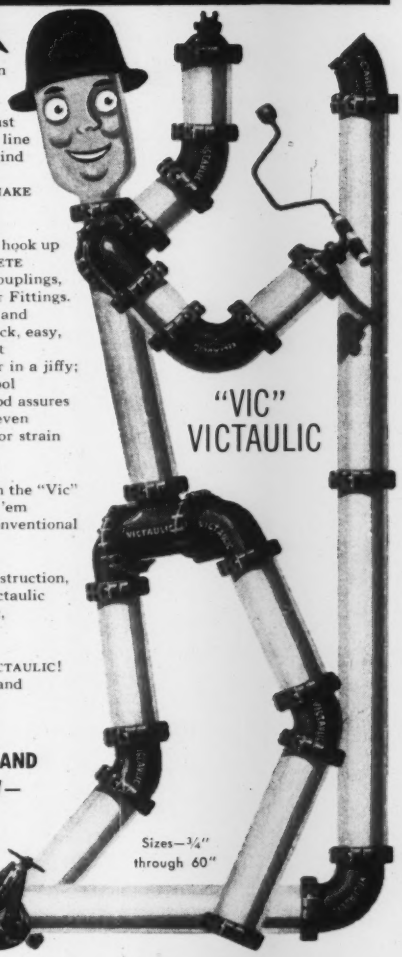
New England Water Works Association, Hotel Statler, Boston, Mass., Sept. 10-12.

N. Y. section American Water Works Association, fall meeting, Whiteface Inn, Lake Placid, N. Y., Sept. 13-14.

Public Works Congress and Equipment Show, Memorial Bldg., Detroit, Mich. Sept. 16-19.

9th International Road Congress, Permament International Association of Road Congresses, Lisbon, Portugal, Sept. 24-29.

WORLD'S BEST METHOD FOR PIPING



The Victaulic name stands for pioneering and world leadership in quick, dependable piping construction. Victaulic offers a *complete method* of piping that just can't be beat! From one end of the line to the other . . . for almost every kind of piping job . . . you'll find that Victaulic's the EASIEST WAY TO MAKE ENDS MEET!

Victaulic is *not* just a quick way to hook up pipe line sections . . . it's a COMPLETE METHOD with a versatile line of Couplings, Full-Flow Elbows, Tees, and other Fittings. Victaulic offers wide adaptability and makes joining those pipe ends quick, easy, and economical. A simple two-bolt coupling brings pipe ends together in a jiffy; a speed or T-wrench is the only tool required. AND the Victaulic Method assures positive-locked, leak-proof joints even under extreme pressure, vacuum, or strain conditions.

Preparing pipe ends is a cinch with the "Vic" Method . . . "Vic-Groover" grooves 'em automatically, twice as fast as a conventional pipe threader!

On *your* next piping job — new construction, repairs, or alterations — try the Victaulic Method and you'll save time, work, and money!

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27TH VICTAULIC YEAR

The easiest way to make ends meet
VICTAULIC
PIPE COUPLINGS AND FITTINGS

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WITH OR WITHOUT FILL

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify

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THE ORIGINAL STEEL MESH
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TILLEY
FLOODLIGHT PROJECTOR
Burns 40 hours on
6 pints of Kerosene

This Model F. L. 6 Floodlight is shown complete with short stand—Weighs 27½ lbs. Overall height 26 inches.

$65.00
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CHICAGO

• A self-contained unit with no cables—entirely independent of batteries, generators, and the like, which makes it more mobile. Wind and rain proof.

• The TILLEY Floodlight Projector gives a white light of 5000 reflected candle power. It is just the thing for night construction work and for emergencies when power is not available. *For complete details we suggest you write.*

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OBITUARY

William H. Stapell, 68, formerly a member of the road construction firm of Stapell, Munnn & Beals, died recently at his home in Hamburg, N. Y. The firm was engaged in highway building for about 30 years.

Ammon E. Crawford, 62, survey technician for the Ohio Highway Department, and employed there for 28 years, died in Columbus, May 29.

Richard D. Snelling, 45, owner of R. D. Snelling Co., Springfield, Ohio, general contractors, died June 4 in that city.

Col. J. D. Arthur, Jr., 59, former assistant engineer commissioner of the District of Columbia, died May 31. He was a 1915 graduate of West Point and took civil engineering degrees at M.I.T. He had overseas service in World War I and for 18 months worked on the construction of American bases in the Caribbean area. At one time he headed a special committee making studies for a master transportation plan for Washington.

Wm. C. Brayton, 83, construction engineer for the Union Pacific R.R. for 22 years, died in Omaha, Neb., May 31. He was an 1893 graduate of the University of Kansas.

James H. Stewart, 63, superintendent of highways in Spencerport, N. Y., died June 4. He had served as secretary of the New York State Association of Highway Superintendents for two years.

Rowland D. Pierson, 63, regional engineer for Santa Fe Railway's Pacific coast lines, died May 29 in Los Angeles. He attended the University of Illinois and started with Santa Fe in 1910 at Winslow, Ariz., in the construction forces, became division engineer there in 1936, transferred to San Bernardino in the same capacity in 1941, and advanced to regional engineer at Los Angels in 1942.

Charles M. Furman, 78, former city engineer of Rockingham, N. C., and long active in construction engineering work in the South, died at Columbia, S. C., May 31. He was a member of the first class to be graduated at Clemson College, South Carolina, in 1896.

Alva L. Hillis, 82, for 49 years city engineer of Marinette, Wis., died June 3. He was a C.E. graduate of Purdue University, 1891, and he had also served as city engineer of Green Bay and Peshtigo, Wis.

Joseph V. Hogan, 65, former president of the Arundel Corp., Baltimore, Md., died June 7. He was a civil engineer graduate of Cornell, 1908. He was resident engineer of the N. Y. State Barge Canal at Medina for seven years. In 1918 he was chief engineer of D. L. Taylor Co. in charge of the construction of the large League Island Dry Dock, Philadelphia Navy Yard.

Hawaii legislature approves $25-million public works

Public works projects totalling $25 million have been approved by Hawaii's territorial legislature, but the territory and its counties are near their bonded debt limit, so some may face considerable delay.

The projects include $6 million to build a traffic tunnel from Honolulu to its suburbs across the Koolau Mountains; $3.5 million for irrigation and reclamation on the islands of Molokai and Hawaii; $6.5 million for new schools; $1.8 million for Honolulu Beach parks; $4.6 million for general public works, including flood control; and $2.3 million additional for completeing the Hamakua Coast Highway.

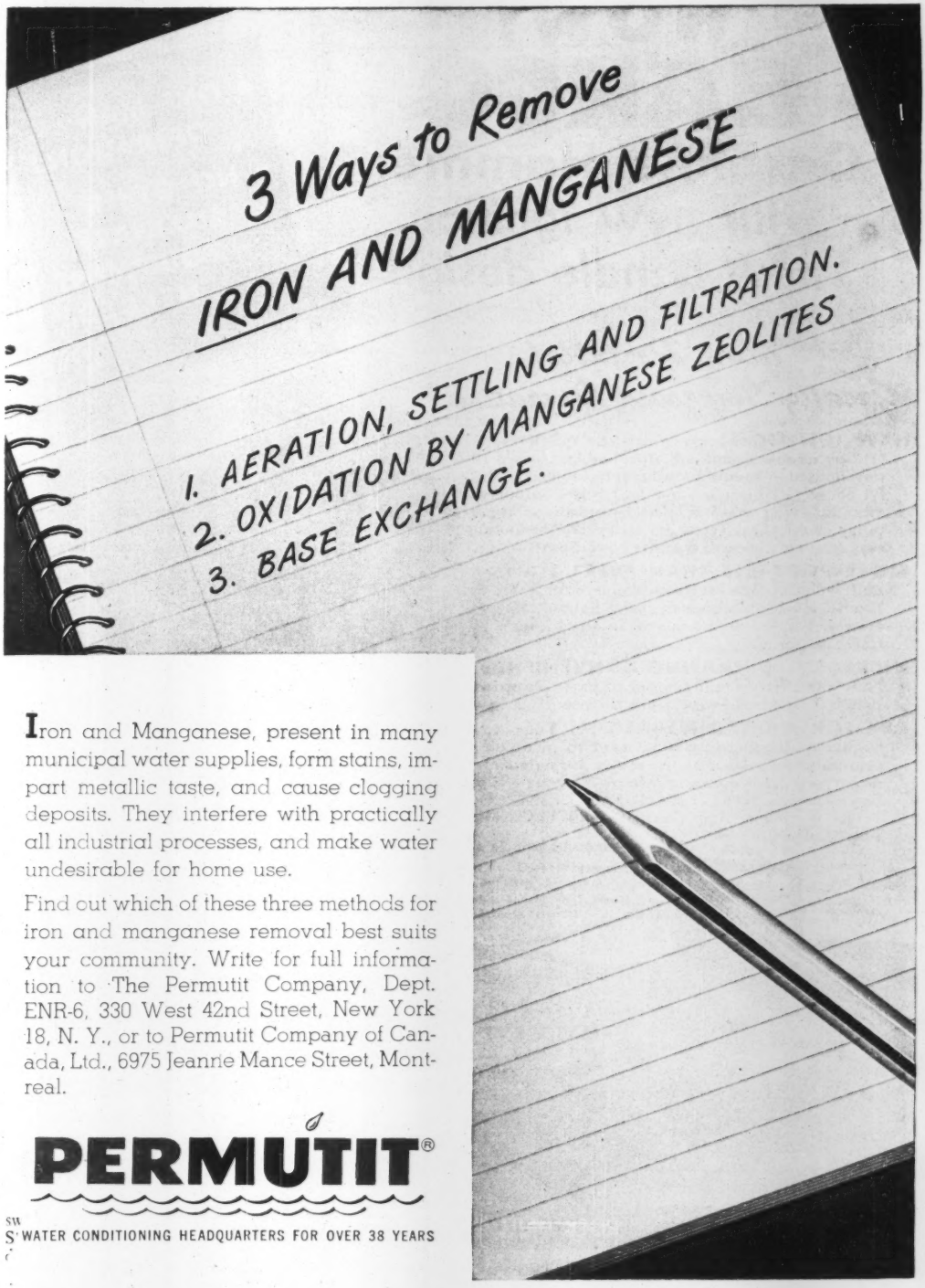
After delays that date from before World War II, the Honolulu traffic tunnel project appears on the verge of starting.

Oren E. Long, Hawaii's new governor, has settled the argument over where to put the tunnel—in Nuuanu Valley or in Kalihi Valley—by saying he wants both.

Federal aid and territorial funds already are set up for the Nuuanu project, a series of short tunnels along an existing route, plus road widening and straightening. Approaches now are being prepared on one side, but delayed on the Honolulu side by right-of-way disputes.

The $6 million bond issue will provide the funds to start the second tunnel in Kalihi Valley. Unlike an earlier bond issue approved in 1947 but unissued, it won't have to be defrayed by tunnel tolls.

• **Super traffic unit**—Consolidation of all municipal functions relating to streets, traffic and parking into a single Department of Streets and Traffic is proposed at Detroit, Mich., whose chief product creates traffic problems everywhere. The report was prepared by D. Grant Mickle, of the Automotive Safety Foundation.


3 Ways to Remove
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NEW IGNITION! Here are the quick facts: (1) Special sealed coil, vibrator, and condenser all now housed in handle— easily replaceable as a unit, (2) Short (5") high tension lead, (3) Continuous vibrating type vibrator not dependent on timer point contact, (4) Faster initial spark, (5) Quick, easy starting under all weather conditions!

MORE PORTABLE THAN EVER! Less total unit weight. New quick disconnect for cable at handle. Coil box eliminated and lighter cable to battery. Easy to take hammer to any location by truck, car, or air!

INCREASED OPERATING CONVENIENCE! New simplified arrangement of parts. Ignition switch placed beside operator's thumb.

ASK FOR A DEMONSTRATION! Your nearby Barco distributor will be glad to give you a demonstration. *Ask about conversion kits for incorporating these latest advanced features into your present Barco hammers.* BARCO MANUFACTURING CO., 1814G Winnemac Ave., Chicago 40, Ill. In Canada: The Holden Co.

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Heavy Duty Model H-6B. Weight, 89 lbs. Up to 1550 strokes per min.

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LABOR

See flexible wage policy developing

The government's wage-control formula hasn't been spelled out in precise terms as yet, but the Wage Stabilization Board has given pretty clear indications that it will come up with a policy of relating wage adjustments to changes in the cost of living.

Close observers of the WSB outline this five-point schedule as the basis for the formula that will be developed, and applied to construction, as well as all other industry:

1. To spur production and keep stability (as in the "annual improvement" increases in the auto industry—ENR June 14, p. 77) the government will make allowances for wage rises based on increased productivity—if no compensating price increase is asked;

2. To protect the lower-wage employer from losing his manpower to a higher-paying competitor, the government will make provision for correcting inter-plant (and presumably inter-job) wage inequalities;

3. Employers will be given more leeway in adjusting wages between employees;

4. Where higher wages are necessary to attract or hold workers in a critical defense job, concessions will be allowed if justified by government agencies concerned with manpower and the production involved.

5. There won't be any single "ceiling."

• **Change marked**—In most respects, these new guideposts would result in a policy much like the World War II version (the allowance for increased productivity, for instance, is really an extension of the wartime OK for piecerate incentives).

But the break with precedent is in the basic approach—tying wages to cost of living.

This was a thing U. S. agencies refused to do in WWII. Instead, they broke the connection between wages and living costs through the "Little Steel" formula, which limited wages to 15% above the level of Jan. 1, 1941. (Ironically, that formula was conceived by George W. Taylor, then vice-chairman of the National War Labor Board. Now, as chairman of WSB, Dr. Taylor is perhaps the chief architect of the newly-developing wage policy.)

At least two factors are forcing the switch away from another "Little Steel" formula: The government doesn't want to upset the five-year cost-of-living escalator wage contracts signed by auto workers; does not feel it can put a firm lid on wages in a period of manpower shortages, without stiff manpower controls.

Concede discipline, technological advances

Though not directly in the field of construction, concessions made by the auto workers' union in its contract with General Motors—a contract often the pace-setter for most industry—are worth study.

The concessions:

1. With one exception, the union will not permit (before June, 1955) any strike, slowdown, sit-down, stay-in, curtailment of work or other interference with production. A strike will be permitted only over fairness of production standards—but only after authorization by the international union, and after a five-day notice to the company. Otherwise, disputes over contract application will be decided by an impartial umpire.

2. No bargaining on any issue whatever for the full five years of the contract.

3. The union recognizes it as the management's "sole responsibility to maintain discipline and efficiency of employees."

4. The union recognizes further that "improvements in the standard of living of employees depends on technological progress, better tools, methods, processes and equipment, and a cooperative attitude on the part of all parties to such progress"; also, it recognizes "the principle that to produce more with the same amount of human effort is a sound economic and social objective."

This last principle, the union said as far back as 1948, "discards the false philosophy of made work, featherbedding, and the erroneous idea that machines take the bread out of the mouths of workmen."

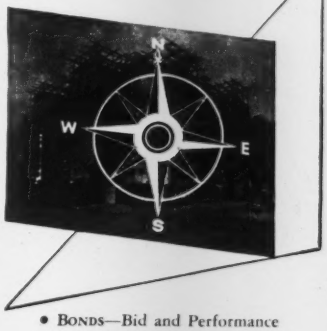
Contractor gets award for 48-hour week

A U. S. Court of Claims decision at Washington, D. C., last week awarded $25,457 to a contractor for overtime expenses incurred at a Presidential order.

Plaintiff was the John A. Johnson Contracting Corp., which had originally asked $32,467 as reimbursement by the Federal Public Housing Au-

(Continued on page 80)

PROMPT, NATION-WIDE
BONDING FACILITIES
FOR CONTRACTORS . . .



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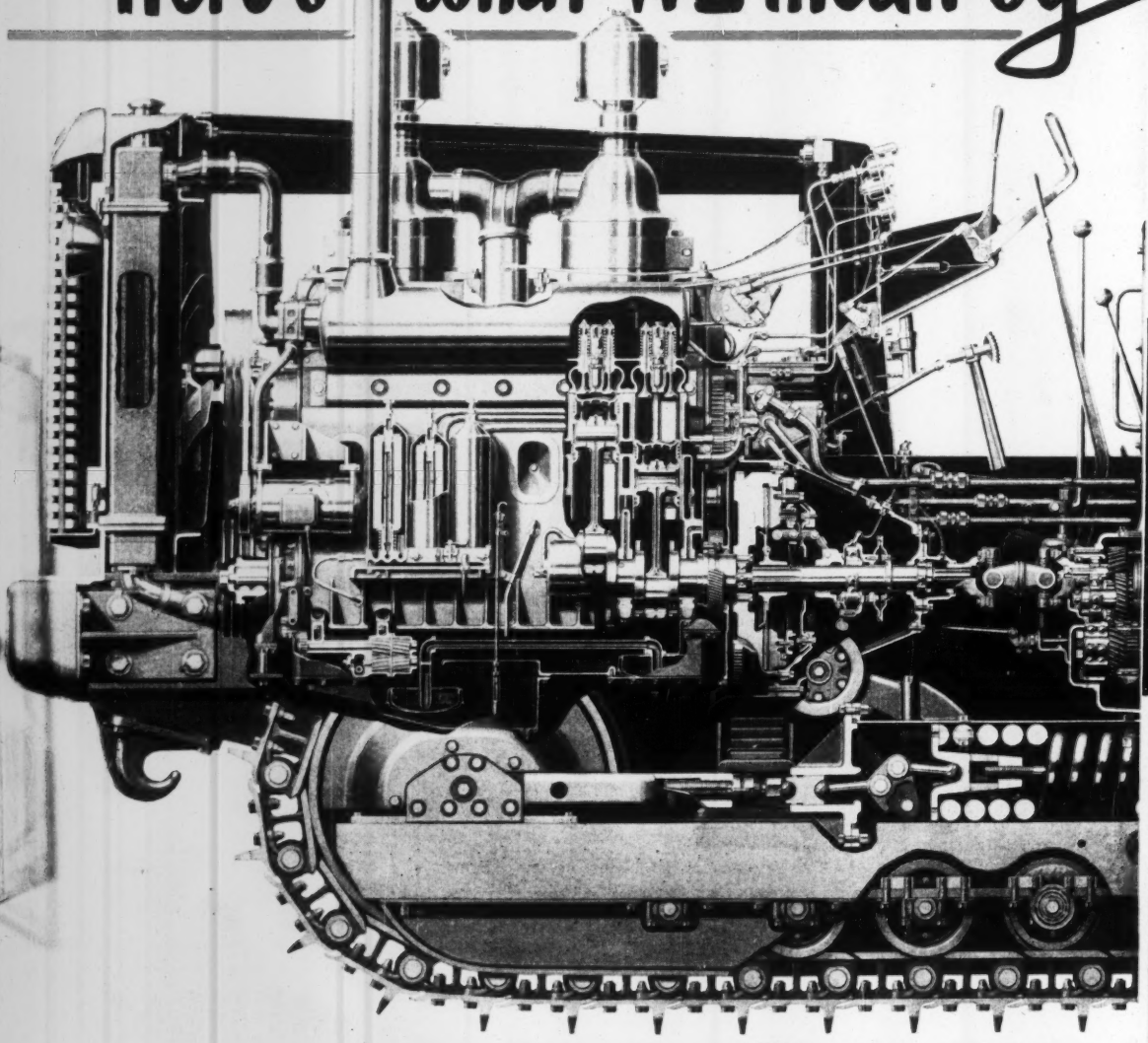

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11,250 lb.

HD-9
70 drawbar hp.
18,800 lb.

* HD-15
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27,850 lb.

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Hydraulic Torque Converter Drive
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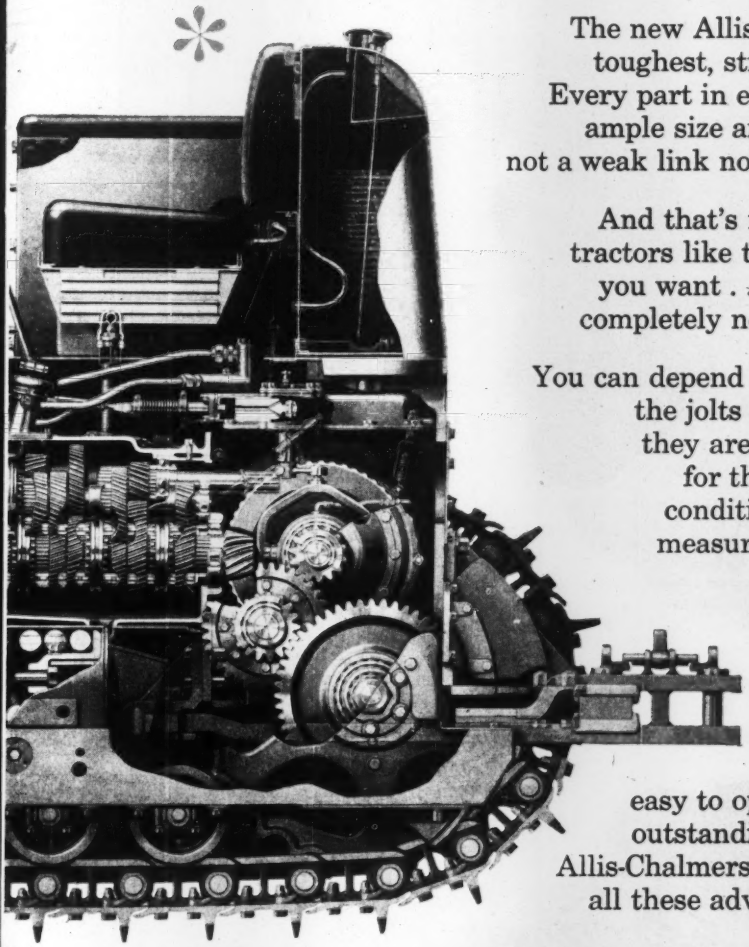
BUILT TO TAKE IT



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Labor . . .

thority. The company was contractor on a housing project near Washington when it was ordered to work on a 48-hour week under a 1943 Presidential order.

The extended week involved extra labor expenses of $7,821 to the company, plus $17,636 for subcontractors, the court found. Attorneys for the construction firm said that the $1,407,000 contract (for construction of the Calvert Houses, in Riverdale) was negotiated on the basis of a 40-hour week.

Labor briefs . . .

• **Raises in Indianapolis**—Raises of 10% are included in an agreement signed between the Indianapolis Building Contractors Association and cement masons, laborers and drivers. Masons are to get $2.27½ an hour; laborers, $1.65; teamsters, from $1.70 to $1.85. Similar boosts are scheduled for carpenters and hoisting engineers.

• **Jobs open**—AFL operating engineers have been informed by William E. Maloney, president, that Atlas Constructors is seeking between 300 and 500 operating engineers for a two-year overseas job. Hourly rate will be $2.90, with a minimum of 60 hours a week at time and a half after 40 hours—$203 a week. Union members were given names and addresses of Atlas recruiting agents in 14 cities.

• **End strike**—A four-day strike of AFL painters in Washington, D. C., ended with a 10-cent wage increase, and promise of up to 5% more Oct. 1, if WSB permits. The settlement came as the independent Master Painters Association and the Washington Painting Contractors' Association were preparing to file a $250,000 damage suit against the union under the Taft-Hartley law. New hourly rate is now $2.52.

• **Peace movement**—In a move to eliminate work stoppages and jurisdictional disputes, the Springfield, Ill., Building Trades Council resolved to ask management and capital interests planning construction in Springfield to sit down with labor leaders and "make agreements for construction on an amicable basis."

• **Carpenters up**—Milwaukee area AFL carpenters have been granted a 29-cent an hour wage boost, and bricklayers a 32-cent an hour raise by general contractors—pending WSB approval.

CONSTRUCTION BUSINESS

Lumber production cut-back apparent

With production outrunning shipments and new orders for the fifth consecutive week, signs of a production cut-back have appeared.

No lumberman wanted to be quoted as saying that production was slipping, but figures released weekly by the National Lumber Manufacturers' Association, coupled with the obvious effects of prices that were sliding down in many sections of the U. S. (ENR May 31, p. 59) made it apparent.

For the week ending June 2, NLMA reported, shipments were 1% below production, new orders were 7.4% below production. A total of 486 mills reported.

In the previous reported period (week ending May 26), shipments were 9.8% below production, new orders 13.3% below. A total of 487 mills reported.

The apparent drop in production is clearer in comparing present rates of production with NLMA's average corresponding weeks in its 1935-1939 base period: For the week ending June 2, 1951, production of the 486 mills reporting was 76.6% above the 1935-1939 average week; for the week ending May 26, production was 95.8% above the corresponding week in the base period.

No sudden or seasonal rush of orders is indicated as a possible reason for the narrowing of the gap between production and orders. For the week ending May 26, unfilled orders of reporting mills represented 59% of stocks, said NLMA. For the week ending June 2, unfilled orders represented 58% of stocks.

• **Cut-back indicated**—Some curtailment of the record-breaking lumber production pushed through the sawmills so far this year was indicated early in May, when trade barometers suddenly noted that production was outrunning even the abnormally high demand.

The size of the production job lumbermen have been turning out is indicated in a recent quarterly report to the U. S. Department of Commerce, which indicates that more than nine billion board feet of lumber were turned out in the first quarter of the current year—a new all-time record.

But, in the first week in May, shipments and new orders suddenly dropped below production (for the first time in years), and these two key figures have remained under production ever since.

One immediate result has been a fairly general drop in lumber prices (ENR May 31, p. 59) that ranged from a few cents to several dollars per Mfbm, and that resulted in part in a slight drop of ENR's cost indexes for June (ENR June 7, p. 80).

One effect of such a drop in price would be that marginal mill operators would drop out of the production picture.

Supplemental building money bills approved

Although Congress has done nothing at all about approving funds for the new fiscal year to date (ENR June 14, p. 17) it did pass—and Mr. Truman approved—two supplemental appropriations bills for a total of $369,466,000.

The bills were:

P.L. 43, fourth supplemental, providing $17,500,000 for new Naval public works construction; $3,672,000 for Bonneville power construction; $281,664,000 for acquisition of real property and construction for the Air Force.

P.L. 34, third supplemental, providing a total of $66,630,000, including $50,000,000 to the Federal Security Agency Office of Education for grants for surveys and school construction for critical defense areas; $4,000,000 for Alaska Railroad construction; and $450,000 to the Corps of Engineers for engineering and economic investigation, Niagara redevelopment remedial works investigation.

Steel production hits record in May

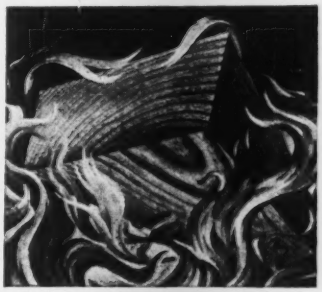
Production of steel in the United States reached a new record during May—reaching a total of 9,094,000 net tons of ingots and castings, the American Iron and Steel Institute reported last week.

The month's production exceeded by 23,000 tons the previous record, set in March of this year, AISI said. Steel ingot production in the first five months of the current year also set a new record, the Institute added, with a total of $43,614,444 net tons—a jump of nearly 4,600,000 tons over the same period in 1950. During the month, steel furnaces were operated at 102.7 percent of theoretical capacity.

Promising continued high production, AISI in a regular weekly report said the industry was scheduled to operate at 103.2% of capacity for the week beginning June 11—equivalent to 2,063,000 tons of ingots and castings.

(Continued on page 82)

WOOD RESISTS FIRE



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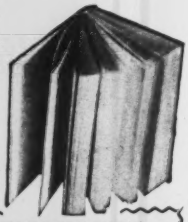
NOMOGRAPHIC CHARTS



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THE CONSERVATION OF GROUND WATER

2. Presents the results of a survey sponsored by **The Conservation Foundation,** providing much information on present development and use of ground water throughout the U. S. For hydrologists, geologists, engineers. Gives basic facts and data, an outline inventory, and maps of total resources. Covers ground water problems resulting from pumping, land settlement and use, irrigation, drainage, waste-disposal, etc. **By Harold E. Thomas, U. S. Geological Survey, 321 pp., 3 maps, $5.00.**

THE MIAMI CONSERVANCY DISTRICT

3. For engineers and conservationists, here is the complete record of the Miami Conservancy District Project, and its progress from planning stages—the obtaining of power, organization, plant assembly, personnel—to its completion. Here are maps, plans, reports, expense statements—everything to show how it worked. Contains a complete tabulation of the concrete, steel and excavation needed at all points. **By Arthur Morgan, 489 pp., 115 illus., $6.50.**

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4. This timely book answers hundreds of questions on civil defense in modern warfare. It covers every aspect of defense against atomic, bacterial, and chemical warfare—tells about aircraft, guided missiles, poison gases, incendiary bombs, radiation—with methods for protecting industries, communities, homes, and individuals and a guide to a civilian defense program for national, state, and local governments. **By Augustin M. Prentiss, Brigadier General, U. S. Army (Ret.), 429 pp., 64 illus., $6.00.**

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Construction business . . .

Housing pace high: No control easing

With housing starts running well ahead of announced government goals during the first five months of 1951, observers in Washington last week saw little chance of easing in credit or other controls over the industry.

The Bureau of Labor Statistics reported that 97,000 housing units were started during the month of May—a somewhat higher figure than had been expected. At the same time, BLS revised its February start figure upward from 80,000 to 80,600.

These figures bring the total for the first five months of 1951 to 444,500 starts—well over the rate that would be required to meet the government's top target of 850,000 starts for the entire year.

• **Under 1950, but**—The total is under starts for the same period in 1950—116,900 units below, to be exact. And it represents a fall-off in housing starts in March, April and May under 1950.

But despite the heavy restrictions on credit, materials controls, and some evidence of shortage of mortgage money (ENR May 17, p. 75), the rate of starts is still estimated at an annual rate of nearly a million new units.

One result, say Washington observers, is definite:

It is more than ever safe to say that the Federal Reserve Board and Housing and Home Finance Agency now plan no early "across-the-board" modification of terms laid down in Regulation X and its FHA and Veterans Administration counterparts.

In fact, the May results will almost certainly postpone the chance of any broad changes.

Court upholds low bidder in Calif. estimating error

Court action has tied up the award of a contract by the California State Department of Public Works for the construction of a unit of the Bayshore Freeway between Army and 17th Streets in San Francisco.

The litigation follows the state's rejection of bids for the project as being too high.

Charles L. Harney, Inc., the low bidder, brought suit against the department and the superior court in San Francisco has issued an injunction restraining the state from receiving or opening new bids or awarding any contract on new bids. The injunction was served on state officials May 26th, five days in advance of the scheduled opening of new bids.

Harney's bid was $1,446,000, as against a state estimate made in March, 1951, of $1,231,000. Suit was brought when he learned that persons within the department admitted estimating errors had been made and that a revised estimate placed a $1,484,000 price on the job.

This contention was proven in the superior court case. Attorneys for Harney claim the state abused its right of discretion when their client was refused the contract award.

Officials and legal counsel for the department of public works declare their intention to appeal the ruling, made by Superior Judge Clarence M. Morris, to the highest courts in the state if certain motions yet available in trial court are unsuccessful.

"The authority of the director of public works, or other similar public official, to reject all bids and call for new bids for the construction of state highways, or other public works, has never before been challenged, to my knowledge," commented State Director of Public Works C. H. Purcell.

"The attorneys for this department also advise me that the ruling of the San Francisco Superior Court appears directly contrary to the holdings of the appellate courts of the state."

Business Briefs . . .

• **More perlite**—Production of perlite—lightweight substitute for sand in concrete and plaster—continues to mount sharply, says the Perlite Institute. A summary of operations for the second quarter of 1951 shows a record production of 1,110,250 4-cu-ft bags, compared to 481,907 bags in the same period of 1950.

• **Urban building**—BLS reports that urban building for March, 1951, was $744 million—a drop of 13% under the same month a year ago. However, the 1951 March volume is a gain of 27% over February this year.

• **Paving awards down**—A total of 5,937,107 sq yd of portland cement concrete were awarded during May, 16% below May a year ago, the Portland Cement Association reports. This is the third month in which awards have been below 1950 equivalents, PCA said.

• **Steel allotments**—Hospitals will get 75,475 tons of steel for the third quarter of 1951—8,700 tons per month over the allotment for June, Defense Production Administration has decided.

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UNIT PRICES BID BY CONTRACTORS

Municipal Airport, Oregon

The City of Roseburg, Oregon, awarded the contract for the improvement of the Municipal Airport to the low bidder, who was 4% below the next to low bid and 13% under the highest. The award was an adjusted contract, $304,148.75, which was made up of the main work plus adjustments from the unit price bidding on alternate additional work.

Minimum wage rates are: pipe layers, $1.90; general laborers, $1.75; cement finishers, $2.50; power equipment operators, $1.90-$2.80; and truck drivers, $1.75-$2.00.

Bidders were:

1 K. F. Jacobsen & Co., Inc., Portland, Ore. (Contract)	$340,190.40
2 C. A. Parker-Schram Co., Portland	355,547.65
4 D. H. Paving Co., Vancouver, Wash.	392,223.75

Items	Quantity	Unit prices 1	C	2
Clear & grub, approx 15 A	ls	$11,000		$10,000
Grade, excav unclass	cy	98,700	0.90	1.12
Drainage:				
T&G conc pipe, 6"	lf	985	2.00	1.40
8"	lf	650	2.20	1.65
T&G reinf conc pipe, 24"	lf	530	5.50	5.30
36"	lf	469	11.00	9.00
Inlets to raise	ea	18	130.00	25.00
To lower	ea	11	130.00	25.00
To remove & relace	ea	3	175.00	100.00
To raise, replace grate with manhole cover	ea	6	150.00	100.00
To construct, saligate	ea	1	120.00	60.00
To construct, gutter type	ea	40	85.00	60.00
Culvert headwall	ea	4	500.00	300.00
Special manhole	ea	1	300.00	300.00
Runway:				
Base	cy	16,220	2.90	3.50
Sub-base	cy	12,171	2.60	2.05
Prime coat	gal	19,469	0.20	0.20
Aggregate mat'l	T	7,171	5.85	5.65
Bituminous mat'l	T	449	34.00	35.50
Seal coat	gal	8,340	0.20	0.20
Seal coat aggregate	T	348	5.00	5.00
Electrical ducts, 2—3" ducts	lf	323	4.00	2.75
6—3" ducts	lf	116	10.00	7.00
Segmented circle, 16 units	lf		2,500	800.00
Lighting, remove present boundry lights	ls		500.00	500.0
Total			$270,997.85	$284,120.25

Subway alterations, Brooklyn, New York

Underbidding by 20% and 22% the two other bids presented, Lenmar Constr. Co. of Brooklyn was low bidder for the alteration of the Prospect Ave. Station on the Broadway-4th Ave. Line, Brooklyn, N. Y. Bids were opened by the Board of Transportation on May 18, 1951.

Wage rates in the Brooklyn area are: common labor, $1.90; stone masons, $3.20; mosaic and terrazzo, $3.00; tile layers, $2.95; water proofers, $3.00; and cement finishers, $3.00.

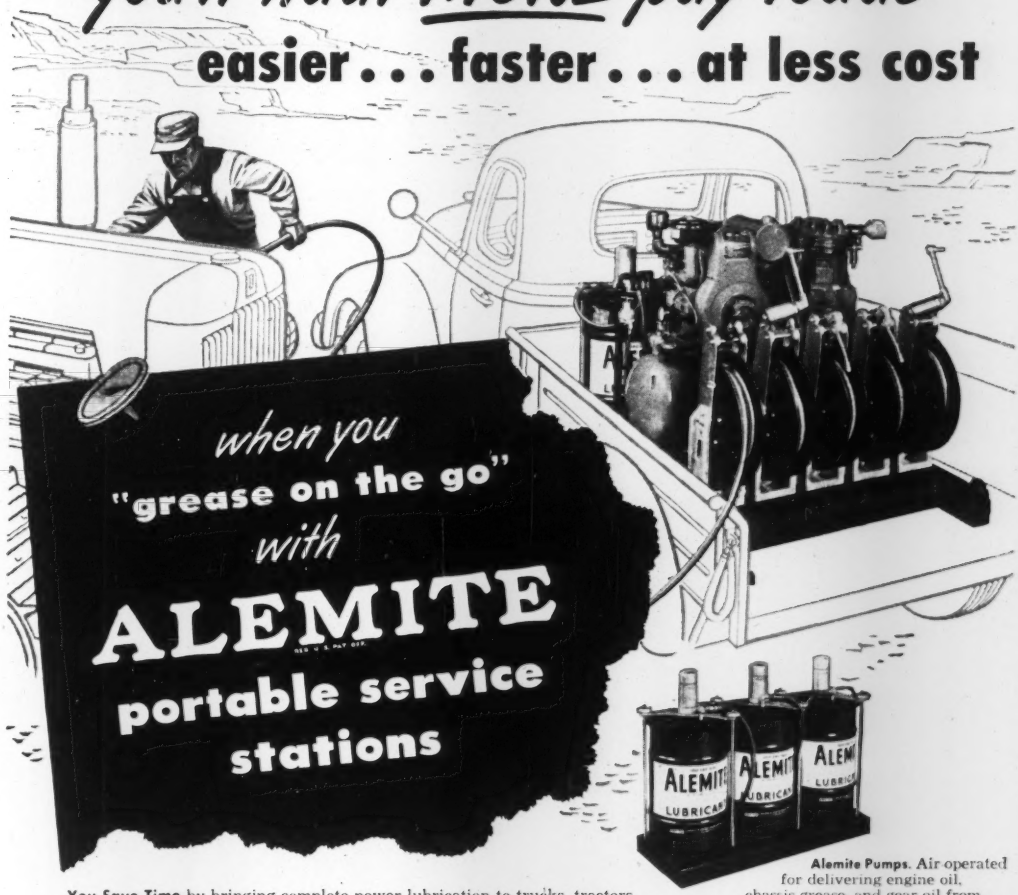
Bidders included:

1 Lenmar Constr. Co. Inc., Brooklyn, N. Y.	$143,541.25
2 Andor Structures, Inc., New York, N. Y.	180,230.00
3 Wagner-Larsen Constr. Co., Brooklyn	183,298.50

Items	Quantity	Unit prices 1	2
Excavation	cy	700	$15.00 $11.00
Earth fill	cy	110	2.00 3.00
Concrete masonry	cy	250	60.00 70.00
Removal and disposal of old masonry	cy	260	35.00 80.00
Riveted steel	lb	3,000	0.35 1.00
Steel reinforcement bars	T	8	350.00 425.00
Waterproofing, 3 ply	sy	200	5.00 3.40
4 ply	sy	450	6.00 4.20
Street surface restored within curb lines	sy	160	8.00 20.00
Furnishing & setting 5" bluestone curb	lf	50	8.00 7.00
Resetting & restoring old curb, bluestone	lf	215	3.00 5.00
Maintenance of railroad	ls		15,000 32,730
Laying cast-iron or steel low pressure water pipe, 6" etc.	lf	200	10.00 15.00
20", etc	lf	60	35.00 30.00
Low pressure cast-iron hub & spigot straight pipe, etc	T	12	250.00 250.00
Spigot pipe, etc	T	1.5	500.00 500.00
Service connections for water pipes	ea	4	300 00 250.00
Laying cast-iron or steel gas pipes, 8" etc	lf	180	15.00 15.00
Service connections reconstructed	ea	5	150.00 250.00
Steel gas by-passing pipe 6"	lf	220	25.00 35.00
Wooden electric duct & conduits—3" duct	f	170	8.00 3.50
Fibre electric duct & conduits—4" duct	f	210	6.00 4.00
Furnish & lay steel el duct & cond—2"	lf	80	3.00 3.50
Maintenance & underpinning bldg, 583-4th Ave	ls		2,000 3,500
Bldg 587-4th A	ls		800.00 1,000
Bldg 589-4th A	ls		1,000 4,000
Bldg 591-4th A	ls		1,000 5,500
Bldg 593-597 4th A	ls		2,000 3,500
Bldg 600-4th A	ls		1,000 1,000
Altering & vent pipes, Sub. div 16	ls		5,000 5,441
White glazed tile	sf	850	3.50 2.60
Vitreous or semi-vitreous colored tile	sf	1,200	5.00 3.75
Mosaic and tile bands in colors	sf	200	30.00 18.00
Marble wainscot & base	sf	200	12.00 9.00
Cement floors, bases etc.	sf	25	3.00 2.00
Cove	lf	120	2.00 1.00
Finish on concrete, brick or hollow tile	sf	100	1.00 0.60
3" finish	sf	400	0.50 0.60
Conc stairs, stairway landing	lf.trrad	650	4.00 3.50
Cement wall string	lf	220	2.00 1.25
Non-slip tile tread	sf	325	3.50 4.00
Common brick masonry	cf	10	10.00 6.00
Weepholes in sidewalls	ea	40	1.00 2.50
Galvanized strap anchors	ea	100	1.50 2.50
Hollow tile masonry	cf	625	2.50 3.00
Hollow metal doors, typ PH	ea	3	250.00 200.00
Railings, typ G, including posts	sf	75	5.00 2.00
Enameled sign plate, etc	sf	130	2.50 12.00
Street railing, typ KA	lf	100	75.00 40.00
Oak handrails	lf	260	6.00 5.00
Drainage—cast-iron frames & covers	ea	7	45.00 35.00
Ferrules & plugs for cleanouts	ea	1	60.00 50.00
3" galvanized steel pipe	lf	130	5.00 7.00
Steel electric conduit, 3/4"	lf	50	1.25 2.50
1"	lf	400	1.60 3.00
1 1/4"	lf	175	2.25 3.20
Cast-iron bottomless outlet boxes & adapter, 4"x4"x2"	ea	10	12.00 8.50
Cast-iron outlet boxes, 4"x4"x3"	ea	65	10.00 6.00
Fuses boxes & switch boxes	ea	2	100.00 17.00
Cast-iron pullboxes 6"x6"x4"	ea	8	30.00 22.00
6"x12"x4" with st trim & door	ea	3	100.00 100.00
Special fittings, crousehingds, typ H No. 310 or equal	ea	1	25.00 19.00
Painting	ls		1,000 1,900
Removing Y storing existing street railings, ect	ls		3,000 3,700
Electric work	ls		8,000 4,700

You'll haul MORE pay loads

easier . . . faster . . . at less cost



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"grease on the go"
with

ALEMITE

portable service stations

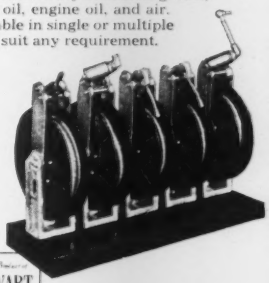
Alemite Pumps. Air-operated for delivering engine oil, chassis grease, and gear oil from original drums. Available for individual or "group" installation.

You Save Time by bringing complete power lubrication to trucks, tractors, equipment right on the job! Air-operated pumps deliver grease "refinery clean" direct-from-barrel-to-bearing.

You Save Money by cutting the costly "downtime" required for lubrication, thereby increasing the output of *both* your men and equipment.

You Save Equipment by keeping your earthmoving rigs running smoother, longer—no matter how far afield they may be! And, you reduce greatly the possibility of bearing failures.

Alemite Hose Reels. For high and low-pressure delivery of chassis grease, gear oil, engine oil, and air. Available in single or multiple units to suit any requirement.



To suit your needs exactly . . .
Alemite Portable Service Stations are S-E-C-T-I-O-N-A-L-I-Z-E-D

Yes, whatever selection of chassis or gear oil pumps and reels you require for 100 lb. drums, you can easily combine them into a tailor-made Alemite Portable Service Station—*exactly keyed to your needs!*

Other Alemite heavy duty pumps, reels and accessories are also available for 400 lb. and 54 gal. capacity drums.

Send today for FREE illustrated catalog describing this equipment. Write to Alemite, Dept. G-61, 1850 Diversey Parkway, Chicago 14, Illinois.

ALEMITE

STEWART WARNER

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N Y

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† Me., Brunswick—B.F. FUEL STORAGE, etc.—B.A. 6/28—Dist. P.W. Engr., First Naval Dist., 495 Summer St., Boston, Mass.; or fuel storage and distr. sys., U. S. Naval Air Station, NOY 28608, Spec. 20260. Plans deposit $20. CD 1/18.

CONTRACTS—HEAVY CONSTRUCTION

Norman E. Jackson, Pittsfield, Me., Contract Awarded, $80,679, East outlet bridge, Big Squa Sipping, Somerset Co., MAINE—State Hy. Comm., Augusta, Me., Bids June 6. CD 5/28.

Thomas DiCenzo, Calais, Me., Contract Awarded, $62,-185, Alternate A, conc. 2.75 mi. A Saco and Biddeford Montgomerie Bros., 491, Warren Bros. Roads Co., 36 Memorial Dr., East Cambridge, Mass., $219,833, 6 mi. surf. R-8, Forestown, Haynesville, Glenwood, Milltown, Proj. 442-A, MAINE—State Hy. Comm., Augusta, Me., Bids June 6.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ N. J., Trenton—B.A. About 7/15—City, Dpt. P. Wks., City Hall, water filtration plant addn. at Calhoun St. and Delaware River, incl. central head house and one filter, gallery with 12 filters each $3,400,000. Bowe, Albertson & Assoc., engrs., 110 William St., New York, N. Y., supervise construction. Havens & Emerson, engrs., 233 Broadway, New York, N. Y., prepared plans. CD 1/26.

BIDS ASKED—BUILDINGS

† Md., Bethesda—ANIMAL—B.A. About 7/23—General Services Admin., Pub. Bldgs. Service 19 and F Sts. N.W., Wash. 25, D. C., Animal Bldg. 14, Dog Kennel Bldg. 14A, National Institutes of Health, Proj. 16 063. CD 5/27/48.

LOW BIDDERS—HEAVY CONSTRUCTION

Property & Supplies, 1400 N. 9 St., Harrisburg, Pa., received no bids June 6, repairs to Reining Pound Dam, Wayne Co.; repair and replacement of Big Spring Dam, Cumberland Co., PENNSYLVANIA. Will readvertise. CD 5/15.

LOW BIDDERS—BUILDINGS

▲ Beili Co., Broad Street Bank Bldg., Trenton, N. J., Low Bidder, $613,000, general contract, Junior High School, LAWRENCEVILLE, Mercer Co., Lawrence Twp. Bd. Educ., Craven Lane, Lawrenceville, N. J. Bids June 4. CD 5/7.

CONTRACTS—HEAVY CONSTRUCTION

Nicholas DiMenna & Sons, Inc., 1515 Blondell Ave., New York, N. Y., Contract Awarded, $328,725, sewers Emerson Ave. from East River to Shurz Ave., etc., NEW YORK, N. Y., President Bronx Boro, Bronx County Bldg., 851 Grand Concourse, New York 51, N. Y. Bids Apr. 19. CD 4/12.

Frank Mascali & Sons, 120 St. and 31 Ave., Flushing, N. Y., Contract Awarded, $191,234, sheet asph. paving Bronxwood Ave. from Pelham Pkway north to Mace Ave., NEW YORK, N. Y., President Bronx Boro, Bronx County Bldg., 851 Grand Concourse, New York 51, N. Y. Bids Apr. 19. CD 4/12.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Ga., Savannah—B.A. 7/19—Georgia Ports Authority, Savannah, 2 W. Drive, Savannah, dredging on south side of Savannah River opposite property of Georgia Ports Authority, Kennedy & Coleman, 806 Peoples St., N.W., Atlanta, archts. and engrs.

LOW BIDDERS—HEAVY CONSTRUCTION

† Robertson-Henry Co., Huntington, W. Va., Low Bidder, $82,715, Flood protection Proj. at Bridgewater, VIRGINIA—U. S. Eng., First and Douglas Sts., N. W., Wash. 25, D. C. Bids June 5.

State Hy. Dpt., Richmond, Va., Rejected bids May 23, reconstruction and hard surf., 8.14 mi. Secondary Routes 6161, 612 and 644 from east of Cheriton to north of Charles Hope, Brunswick Co., L.B. $106,752 **hard surf., 3.18 mi. Secondary Route 644 and 645 from north of Volens to near Nathalie, Halifax Co., L.B. $67,489**hard surf., 4.4± mi. Secondary Route 652 near Tom's Creek to Dickenson Co. line, Wise Co., L.B. $115,948, VIRGINIA. State Hy. Dpt., Richmond, Va. CD 5/28, under LB.

Midstate Contractors Inc., Hickory, N. C., Low Bidder, $142,036, outfall and collection sewers, Lee Constr. Co., 422 S. Church St., Charlotte, N. C., $246,960, sewage and waste disposal plant, MARION, N. C., City Town Hall, Marion, N. C. Bids May 31. CD 5/4.

▲ Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y., Low Bidder, $6,061,434, est. $8,008,000, 10,198 ft. bridge, 24 ft. double leaf elec. operated bascule span, two 75 ft. steel side spans, rein.-con. approach spans on concrete pile bents, deck provides two 26 ft. roadways separated by 36 ft. median with 3 ft. sidewalks on each side, across Bay of St. Louis on U. S. Hy. 90 between Bay St. Louis and Henderson Point, Toll Proj. 1, Contr. 1, Hancock and Harrison Counties, MISSISSIPPI. State Hy. Comm., Jackson, Miss. Bids June 5. CD 5/1.

Clement Betpouey Jr. & Co., Canal Bldg., New Orleans, La., Low Bidder, $130,127, installing addn. improvs. to WW sys., GRETNA, LA. East Jefferson Waterworks Dist. 1, Gretna, La. Bids May 29.

▲ † Lehman-Roberts, Inc., 1098 Wilson St., Memphis, Tenn., Low Bidder, $1,834,948, exten. runways at Naval Air Station, MEMPHIS, TENN. Dept. Navy, Officer in Charge of Constr., P. O. Box 365, Naval Base, Charlestown, Tenn. Bids June 6. CD 5/10.

LOW BIDDERS—BUILDINGS

S. Lewis Lionberger, 317 Campbell Ave., Roanoke, Va., Low Bidder, $83,580, BOILER PLANT***R. H. Lowe, Inc., 125 Salem Ave., W., Roanoke, Va., $131,723, connecting mains at Catawba Sanatorium, CATAWBA, VA. State of Virginia, Richmond, Va. Bids May 29. CD 4/23.

Mills & Jones, Inc., 22e0 4 Ave. S., St. Petersburg, Fla., Low Bidder, $432,482, CHURCH-EDUCATIONAL Bldg., ST. PETERSBURG, FLA.—First Baptist Church, 120 4 St. N., St. Petersburg, Fla. CD 5/17.

CONTRACTS—HEAVY CONSTRUCTION

E. C. White, 1020 W. 39 St., Norfolk, Va., Contract Awarded, $230,694, paving Cottage Toll Rd., NORFOLK, VA. City, City Hall, Norfolk, Va.

† Automatic Electric Sales Corp., 1053 W. Van Buren St., Chicago, Ill., Contract Awarded, $77,175, alterations, re-arrangements, improvs. to telephonic communication, Spec. 25750, CAMP LEJEUNE, N. C. Pub. Wks. Office, Bldg. 1005, Marine Barracks, Camp Lejeune, N. C. Bids May 25. CD 5/11.

† R. H. Wright & Son, Fort Lauderdale, Fla., Contract Awarded, $194,752, washrack and compass swinging base at MacDill Air Force Base, TAMPA, FLA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. CD 1/23/48.

▲ Cook Constr. Co., Hy. 80 W., Jackson, Miss., Contract Awarded, $335,235, grading, drainage, culverts, bridges, 1.682 mi. U. S. Hy. 80 between Bolton and Clinton, F. A. Grade Crossing Proj., FGI 004-1 (3) and FAP FI 004-1 (5), Hinds Co.***Dunn Constr. Co., 2508 3 Ave. N., Birmingham, Ala., $344,735, est. $325,000, grading, culverts, gutters, box bridges 2.121 mi. Miss. Hy. 6 between Tupelo and Pontotoc, F. A. Proj. U 020-2 (4), Lee Co.***Dickenson & Bowen, Brookhaven, Miss., $417,514, est. $395,000, grading, bridge, bit. surf. 6.131 mi. Miss. Hy. 6 between Pontotoc and Tupelo, F. A. Proj. 020-2 (2), Pontotoc Co., MISSISSIPPI. State Hy. Comm., Jackson, Miss. Grand total $1,097,486. Bids June 5. CD 5/25.

CONTRACTS—BUILDINGS

† King-Hunter, Inc., Greensboro, N. C., Contract Awarded, $87,580, 5 BUILDINGS with necessary utilities and services and grease racks for 2nd Division shop, Spec. 26930, CAMP LEJEUNE, N. C. Pub. Wks. Office, Bldg. 1005, Marine Barracks, Camp Lejeune, N. C. Bids May 14. CD 4/16.

A. B. Newton Co., Vidalia, Ga., Contract Awarded, $372,200, 50 HOUSING UNITS, DOUGLAS, GA. Douglas Housing Auth., Douglas, Ga. Bids June 5. CD 5/11.

Boone Contg. Co., 3rd Natl. Bank Bldg., Nashville, Tenn., Contract Awarded, Approx. $300,000, CHURCH, NASHVILLE, TENN. Roman Catholic Diocese, c/o contractor.

MIDDLE WEST

BIDS ASKED—BUILDINGS

† Ohio—STORAGE—B.A. 6/29—U. S. Eng., 830 W. Broadway, Louisville 3, Ky., paint and oil storage bldg. at Locks and Dams 34, 36, 38 and 39, Ohio River, CIVENG 15-029-51-59.

Ill., Madison—HOUSING—B.A. 7/16—Madison County Housing Auth., D. F. Braner, exec. dir., 3 and Haller Sts., twenty-two 2 story, concrete, brick, frame 100-unit housing, $800,000-$900,000. Friedman, Alschuler & Sincere, 223 W. Jackson Blvd., Chicago, archts. CD 3/20.

Ill., Evanston—FACTORY—Bids Asked—Z Products, Inc., 4011 N. Bernard St., factory, $80,000. Barancik & Conte, 919 N. Michigan St., Chicago, 11, Ill., archts.

CONTRACTS—HEAVY CONSTRUCTION

† U. S. Eng., 609 Federal Bldg., Detroit 26, Mich. Own Forces. $230,000. dredging Toledo Harbor, OHIO.

Illinois Cities Water Co., Clifford Fire, Dist., mgr., 1502 Broadway, Mount Vernon, Ill. Own Forces, $34,000. WW imprvs. extens. incl. exten. Salem Road mainn, imprv. Creek, pumping station and installing 2,000 gpm pump at filter plant, MOUNT VERNON, ILL.

CONTRACTS—BUILDINGS

D. D. Davis Constr. Co., 5234 Glenwood Ave., Youngstown, O. Contract Awarded, $125,000, 1 story, 15,000 sq. ft. FACTORY to mfg. electric induction heating furnaces, BOARDMAN, O. Magnathermic Corp., 701 Andrews Ave., Youngstown, O.

Steinle-Wolf, 128 N. Jefferson St., Fremont, O., Contract Awarded, $639,368, brick, concrete Receiving HOSPITAL addn. for Toledo State Hospital, TOLEDO, O. Dpt. P. Wks., Samuel O. Linzell, dir., Columbus, O. Awarded May 25. CD 5/1.

Montague Constr. Co., 228 N. LaSalle St., Chicago, 1, Ill., Contract Awarded, $300,000, 2 story, steel, concrete, brick, stone SCHOOL, CHICAGO, ILL. St. Francis Borgia Parish, 3520 N. Panama St., Chicago, 35, Ill. Bids May 22, awarded May 31. CD 5/7.

Henry Bros., 228 N. La Salle St., Chicago, 1, Ill., Contract Awarded, $300,000, 2 story, concrete, brick, steel, stone CHURCH, PARK RIDGE, ILL. St. Paul of the Cross Parish, 144 Northwest Hy., Park Ridge, Ill. Bids May 1, awarded May 29. CD 4/25.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲ Tex., San Antonio—AIRPORT ADMINISTRATION—B.A. 6/28—City, City Hall, Military Plaza, administration and terminal for municipal airport, $1,250,000. Plans deposit $50. Atlee B. & Robert M. Ayres, Transit Tower Bldg., archts. Frank T. Drought, 117 W. Pecan St., engr. Leigh Foster Assoc., South Bend, Ind., engrs. Extended date. CD 5/29.

† Tex., Dallas—GARAGE—Bids Asked—U. S. Govt., P. Wks. Office, Naval Air Station, Dallas, 64x160 ft., masonry transportation garage, NOY 27022, Spec. 29021. $90,000. Plans deposit $15. Extended date. 5/29.

BIDS ASKED—BUILDINGS

▲† N. M., Los Alamos—LABORATORY—B.A. 6/28—U. S. Atomic Energy Comm., Los Alamos, laboratory maintenance shops, Inv. No. 291-051-129, $1,250,000-$1,500,000. Plans deposit $50. Extended date. CD 5/16.

▲ Tex., Fort Worth—HOSPITAL, etc.—Bids Asked—Dr. Judge M. Lyle, 3901 S. Westcliff Rd., 100-bed 10 story, bsmnt., hospital and doctors office bldg., $2,273,939. CD 6/5.

SOON LETS CONTRACT—BUILDINGS

Tex., Fort Worth—WAREHOUSE—Service Plumbing Supply Co., 212 Lipscomb St., soon lets contract, ware-

(Continued on page 88)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

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FOR HEAVY GOING

P&H *Magnetorque**

SLICKEST SWING YOU'VE EVER KNOWN!

It's everything you've wanted for more profitable rock handling . . . It's the P&H 955-A (2½ yd. shovel) . . . newer . . . better . . . proving it where the going is heaviest. Here's why:

P&H MAGNETORQUE ELECTRIC SWING. The smoothest, slickest swing you've ever known . . . yours for the full life of your machine. Old style swing frictions are *out* . . . all their troubles, adjustment and replacement costs.

SMOOTHER OPERATION means less strain on machine and operator. **GREATER STABILITY** gives you increased digging ability. **ALL-WELDED** for maximum strength.

Ask to see the one working nearest you. It's the 2½ yd. version of the famous 1055 (3½ yd.).

P&H **EXCAVATORS**
4404 W. National Ave.
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

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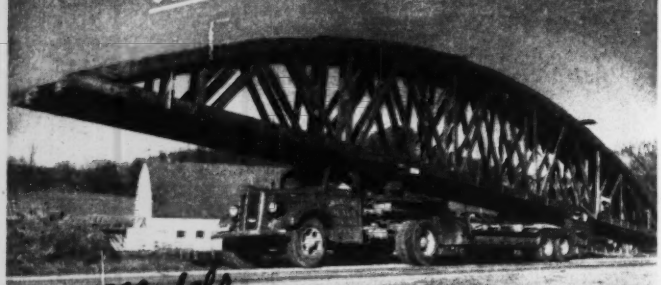
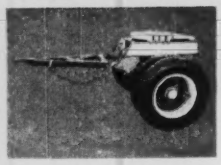
Choose LaCROSSE heavy-duty TRAILERS



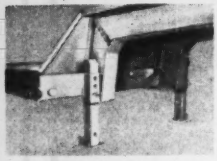
85 Models . . . 6 to 67-ton capacity . . . single, dual or tandem axle . . . flat, drop or tilting platform

WITH FULL LINE OF JOB-PROVED ACCESSORIES



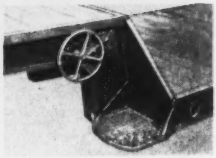
REMOVABLE DOLLIES

8 sizes—6 to 25-ton capacity—with semi-automatic fifth wheel for converting semi-trailers to full trailers in one simple operation. Provides economical "stand-by" for lay-over operations.



POST LANDING GEAR

Simplifies releasing loaded or unloaded trailers without danger of falling off of blocking. 66,000 lb. gross load capacity with 3 simple hand adjustments for equalizing uneven levels in roadbed.

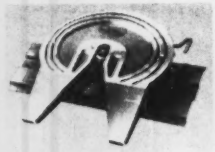


HAND BRAKE

Increases braking power . . . relieves tension on tractor brakes while holding loads on inclines, or for level parking. Ideal for locking trailer while hooking tractor. Located on left side of gooseneck.

BEAVER TAIL

Increases platform area . . . lowers rear loading point, thus making load easier, safer without use of conventional skids. Short pair of hinged skids (shown) available at slight additional cost.



FIFTH WHEELS

Choice of Holland or Austin designs with capacities from 24,000 to 60,000 lbs. for handling gross king pin loads both on and off highway. Semi-automatic, full floating types with rubber mounting.

SKID RAILS

Furnished on side or rear channels for users who prefer skid rail method of loading. Also complete selection I.C.C. lights, air or vacuum brakes, extension brackets, lashrings, load binder, tire carrier, etc.

Write for free literature

LaCROSSE TRAILER CORPORATION, LaCrosse, Wisconsin

LC-19

LaCROSSE

America's Favorite **LOW BED TRAILER**

(Continued from page 86)

house, $85,000. Hubert H. Crane, 3711 Camp Bowie Blvd., archt.

LOW BIDDERS—HEAVY CONSTRUCTION

Atkinson Windle Co., 10 Hickory St., Chillicothe, Mo., Low Bidder, **$89,291,** two 80 ft., one 100 ft. continuous I-beam spans, one 55 ft. I-beam spans, Sta. 158 plus 85, Dade Co.***St. Louis County Bridge & Grading Co.,** 7929 Alabama St., St. Louis, Mo., **$78,889,** two 60 ft., one 70 ft. continuous I-beam spans, Sta. 383 plus 89 over Rte. 40, St. Charles Co. ***O'Dell & Riney Constr. Co.,** Box 3775, Kirkwood, Mo., **$194,893,** two 54 ft., one 65 ft. continuous I-beam spans, two 92 ft., one 115 ft. continuous plate girders, two 51 ft. continuous I-beam spans, Montgomery Co.***Cameron Joyce Co.,** 19 S. 7 St., Keokuk, Ia., **$65,371,** two 15 ft. rein.-con. slab span, two 30 ft., one 45 ft. deck girder span, Sta. 222 plus 35, Schuyler Co.***Jos L. Pohl Contractor,** Nevada, Mo., **$90,991.** four 45 ft. I-beam spans, one 120 ft. steel truss spans, Sta. 252 plus 94, Lincoln Co., MISSOURI. State Hy. Dpt., Jefferson City, Mo. Bids June 1. CD 5/18.

R. G. Aldridge, 1610 Nebraska St., Kansas City, Kan. Low Bidder, **$419,073,** 24 ft. b. conc. 2,984 mi., Montgomery Co.***Cameron Joyce Co.,** 19 S. 7 St., Keokuk, Ia., **$242,121,** 22 ft. b. conc. 2.807 mi. Schuyler Co.***St. Louis County Bridge & Grading Co.,** 7929 Alabama St., St. Louis, Mo., **$112,650,** 22 ft. b. conc. 0.265 mi., St. Charles Co.*** **Granite Bituminous Paving Co.,** 3943 Duncan Ave., St. Louis, Mo., **$80,060,** 20 ft. b. conc. 3.806 mi., Phelps Co.; **$89,338,** 20 ft. b. conc. 4.447 mi. Pulaski Co.; **$96,576,** 20 ft. b. conc. resurf. 4.887 mi. Pulaski Co., MISSOURI. State Hy. Dpt., Jefferson City, Mo. Bids June 1. CD 5/21.

Ben M. Hogan & Co., 1100 Fairview St., Little Rock, Ark., Low Bidder, **$116,013,** est. $110,069, resurf. runway, **$383,636,** est. $311,051, exten. runways at Adams Field, LITTLE ROCK, ARK. City, Little Rock, Ark. CD 4/26.

LOW BIDDERS—BUILDINGS

Black Hawk Co., c/o Bd. Suprvrs., Waterloo, Ia., rejected bids May 22, 3 story brick, concrete, steel, cut stone county home, WATERLOO, IA. Will readvertise. CD 5/4.

E. M. Lambert & Son, 2842 Cedar St., Abilene, Tex. Low Bidder, **$318,560,** 42 DWELLING UNITS for total 20 bldgs., Tex. 53-1 & 53-2, HASKELL, TEX. Housing Auth. of Haskell, Haskell, Tex. Bids June 4. CD 5/16.

CONTRACTS—HEAVY CONSTRUCTION

St Louis Public Service Co., 3869 Park Ave., St. Louis, Mo. Own Forces. **$210,000.** paving over 15 mi. abandoned street car tracks on streets formerly used by Forest Park, Southampton, Park and Chouteau Ave. lines, ST. LOUIS, MO.

Hennessy Bros. Inc., 4001 1st Ave., S.E., Cedar Rapids, Ia. Contract Awarded, **$79,591,** water main extens. in Westwood addn. incl. 17,555 ft. 6- to 12-in. c.i. pipe. CEDAR RAPIDS, IA. City, Cedar Rapids, Ia. Bids May 28. CD 5/10.

R. V. Leary Co., 311 Securities Bldg., Des Moines, Ia. Contract Awarded. **$92,871,** sewage plant, GRISWOLD, IA. City, Griswold, Ia.

Northwestern Eng. & Constr. Co., Rapid City, S. D. Contract Awarded. **$238,089.** sewers, RAPID CITY, S. D. City, Rapid City, So D. Bids Apr. 6. CD 6/26/50.

City Port Arthur, Tex. Own Forces. **$50,000** unit of reconstructing water lines, PORT ARTHUR, TEX. City, Port Arthur, Tex. CD 12/28/49.

City, Port Arthur, Tex. Purchase and Hire, **$75,000,** unit 15-in. storm sewers; **$65,000,** sanitary sewer rehabilitation unit, PORT ARTHUR, TEX. CD 12/21/50.

City, Port Arthur, Tex., Purchase and Hire. **$76,000.** 3 mi. 6 in. stabilized base and 1½ in. hot mix asphalt topping streets, PORT ARTHUR, TEX. Smith & Norris Harris Bldg., Port Arthur, Tex., engrs. CD 12/12/50.

CONTRACTS—BUILDINGS

Robert Paulus Constr. Co., 4441 Morganford Rd., St. Louis 16, Mo. Contract Awarded. **$644,620.** general constr. rein.-con., brick, stone secondary HIGH SCHOOL Warson Rd. between Conway and Daniel Boone Parkway, LADUE (ST. LOUIS 24, P.O.), MO. Bd. Educ., Ladue School Dist. Joel Y. Lund, pres., and Dr. Iwan C. Nicholas, supt., 9060 Ladue Rd., Ladue, Mo. Bids June 5. CD 5/14.

Kiefner Lumber Co., Perryville, Mo. Contract Awarded. Approx. $500,000. 1 and 2 story, 61x238 ft., 80x140 ft., brick, rein.-con. HIGH SCHOOL, PERRYVILLE, MO. Assumption and St. Boniface Catholic Parishes, Rev. Maurice Hymel, Perryville, Mo. Bids May 24. CD 4/7.

Dickie Constr. Co., 317 N. 11 St., St. Louis 1, Mo. Contract Awarded. **$400,000.** SYNAGOGUE and SCHOOL Amherst Ave. and Hanley Rd., UNIVERSITY CITY (ST. LOUIS 5, P.O.), MO. Shaare Zedek Congregation, Rabbi Ephreim Epstein, 5470 Delmar Blvd., St. Louis 12, Mo. Bernard Bloom, 705 Chestnut St., St. Louis 1, Mo., archt.

Floyd Richards, 505 Jackson St., Amarillo, Tex. Contract Awarded. **$639,293,** Senior High SCHOOL, DALHART, TEX. Dalhart Independent School Dist., Dalhart, Tex. Bids Apr. 19, awarded June 4. CD 4/30, under LB.

Robert McCarthy, 1612 Kipling St., Houston, Tex. Purchase and Hire. **$325,000,** 15 DWELLINGS, HOUSTON, TEX. CD 5/22.

▲ **Stephen F. Austin State Teachers College,** Nacogdoches, Tex., rejected bids May 9, FINE ARTS-AUDITORIUM, NACOGDOCHES, TEX. L. B. $1,023,000. CD 5/15, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ore., Coos Bay—B.A. 7/2—City, City Hall, sewage pumping station, 10,350 ft. 8- to 12-in. pipe, Mingus Park Heights dist.; sewerage sys. 21,200 ft. 8- to 24-in. pipe, Bayview and Ferndale dists. Plans deposit $30. Stevens & Koon, 732 3 St., Portland, engrs. CD 10/23.

Wash., Wenatchee—B.A. 7/2—Chelan Co. Public Utility Dist., c/o Stone & Webster Eng. Corp., engrs., 49 Federal St., Boston, Mass., 34,000 ft. No. 12 AWG copper cable 5 to 9 strands for expansion of Rock Island Dam; 6,000 ft. 1,250,000 circular mil single conductor 15,000 volt copper cable for expansion of Rock Island Dam. CD 1/2.

† Washington—B.A. 7/17—U. S. Eng., City-County Airport, Walla Walla, bridge for Union Pacific Ry. relocation and overpass for State Hy. 3, Wallula, Walla Walla Co., Eng. 45-164-51-67.

BIDS ASKED—BUILDINGS

Calif., Oakland—SCHOOL—B.A. 7/10—Bd. Educ., Oakland School Dist., 1025 2 Ave., Oakland, McClymonds High School. CD 10/30/45.

Calif., Sacramento—SCIENCE—B.A. 7/10—State Div. Architecture, P. Wks. Bldg., science bldg. at Sacramento State College. Plans deposit $50. CD 1/19.

SOON LETS CONTRACT—BUILDINGS

Nev., Reno—TEMPLE—Masonic Bldg. Assn., Masonic Temple, soon lets contract, temple bldg. addn. $400,000. Russell Mills, 309 N. Virginia St., archt.

LOW BIDDERS—HEAVY CONSTRUCTION

Goetz & Brennan, Seaboard Bldg., Seattle 1, Wash., Low Bidder, $367,961, clearing, grading, bit. surf. and rein.-con. slab bridges 5.28 mi. Secondary State Hy. 1-A, Snohomish to Lake Stevens, Snohomish Co., WASHINGTON. State Hy. Dpt., Olympia, Wash. Bids June 5. CD 5/25.

† The Electric Co., Port Angeles, Wash. Low Bidder, $269,670. Schedule I, J. P. Alvey sub-station, Inv. 5800, OREGON. Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore. Bids June 1. CD 5/16.

City, City Hall, Newberg, Ore. cancelled bids June 4, sewage pumping station, sewer main, NEWBERG, ORE. Will re-advertise. CD 5/23.

Curtis & Finley, Newberg, Ore. Low Bidder. $57,347, water treatment plant, NEWBERG, ORE. City, City Hall, Newberg, Ore. Bids June 4. CD 5/23.

† Drury Electric Co., Fuller Bldg., San Bernardino, Calif. Low Bidder, $228,199, electrical distr. sys., NOY 27071, Spec. 29071; George W. Carter Co., 1721 W. Olympic Blvd., Los Angeles, Calif., $538,711, test bldgs. and facilities both at Randsburg Wash Test Range, NOY 27970, Spec. 29070; Inyokern, Calif. Bids May 31. CD 5/16.

† McDonald & Kruse, 7540 Wheatland St., Sun Valley, Calif. Low Bidder, $469,739. remedial measure for subsidence at Pier 3, NOY 27988, Spec. 29669, LONG BEACH, CALIF. Pub. Wks. Office, U. S. Naval Station, Long Beach, Calif. Bids May 31.

Kumper Constr. Co., 3701 Overland Ave., Los Angeles, Calif. Low Bidder, $156,749. Eagle Rock connection and lateral, LOS ANGELES, CALIF. Metropolitan Water Dist., 306 W. 3 St., Los Angeles, Calif. Bids June 5. CD 5/25.

L. H. Henson, 4721 E. Florence Ave., Bell, Calif., Low Bidder, $81,778, sanitary sewers in Primrose Ave., C. I. 1318, Temple City, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids June 5. CD 5/17.

Lars Oberg, 1421 N. Willow Pl., Los Angeles, Calif., Low Bidder, $62,900, steel stringer bridge on Arrow Hy. over Little Dalton Wash, C. C. 20-713, Azusa, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids June 5. CD 5/17.

Warren-Southwest, Inc., Box 419, Torrance, Calif., Low Bidder, $86,852, asphaltic concrete lined channel in Sawpit Wash, Longden Ave. to Rio Hondo Ave., Monrovia, LOS ANGELES, CALIF. Los Angeles Co., Flood Control Dist., 751 S. Figueroa St., Los Angeles, Calif. Bids June 5. CD 5/18.

Harl C. Harmeling, 1710 Mt. Diablo Ave., Stockton, Calif., Low Bidder, $153,890, reconstr. Henry Rd. between Sonora and Dodds Road, reconstr. Dodds Rd. between Henry and county line, etc., STOCKTON, CALIF. San Joaquin Co., Court House, Stockton, Calif. Bids June 4. CD 5/25.

LOW BIDDERS—BUILDINGS

Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif., rejected bids May 15, NURSES HOME, LOS ANGELES, CALIF. L. B. $566,600. CD 5/22, under LB.

▲ Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif., rejected bids May 29, COMMUNICABLE DISEASES unit of County General Hospital, LOS ANGELES, CALIF. L. B. $3,975,380. CD 6/4, under LB.

▲† Zoss Constr. Co., 401 N. Ave. 19 St., Los Angeles, Calif., Low Bidder, $2,008,616, rehabilitation of Camp San Luis Obispo, Calif., ENG 04-353-51-82, SAN LUIS OBISPO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 7. CD 5/28.

CONTRACTS—HEAVY CONSTRUCTION

D-H Paving Co., Vancouver, Wash., Contract Awarded, $93,936. light bit. surf., non-skid single sealing and bit. penetration macad. 34.5 mi. Lewis, Cowlitz,

(Continued on page 92)

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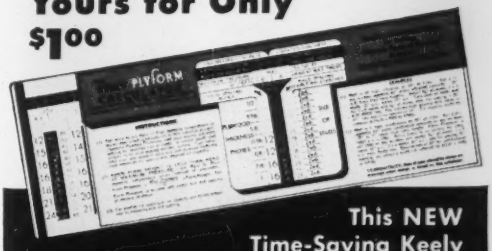

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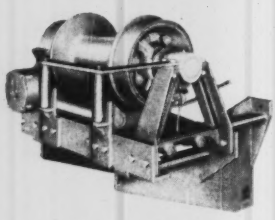

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(Continued from page 89)

Pacific and Washkiam Counties, WASHINGTON. State Hy. Dpt. Olympia, Wash. Bids June 5. CD 5/25.

† **Northwest Precote, Inc.,** 7343 E. Marginal Way, Seattle, Wash. Cotract Awarded. $69,488, Covington Sub-station imprvs., King Co., Inv. 5816, WASHINGTON. Bonneville Power Admin., 827 N.E. Oregon St., Portland, Ore. Bids June 1. Awarded June 1. CD 5/22.

J. A. Terteling & Sons, Inc., 4011 Fairview Ave., Boise, Idaho. Contract Awarded. Approx. $350,000, grading new right-of-way for line changes in Cascade Mountains, WASHINGTON. Northern Pacific Ry., B. Blum, ch. engr., 176 E. 5 St., St. Paul, Minn. CD 3/14/44.

Utility Contractors, 1043 E. 90 St., Seattle, Wash., Contract Awarded, $70,438, treatment plant and sewer lines, GARFIELD, WASH. City, City Hall, Garfield, Wash. G. D. Hall & Assocs., Larson Bldg., Yakima, Wash., engrs.

Judson-Pacific-Murphy Corp., 4300 E. Shore Hy., Emeryville, San Francisco, Calif., Contract Awarded, $71,105, 7,878 pcs. ½- to 1½-in. round and square reinforcing bars in 60 ft. lengths for expansion of Rock Island Dam, WENATCHEE, WASH. Chelah County Public Utility Dist., c/o Stone & Webster Eng. Corp., engrs., 39 Federal St., Boston, Mass. Bids May 15. CD 5/8.

CONTRACTS—BUILDINGS

Harris Constr. Co., 264 Palm St., Fresno, Calif., Contract Awarded, $600,000, Cooper's Department STORE at Fulton and Merced Sts., FRESNO, CALIF. Panama Realty Co., 36 5 St., San Francisco, Calif. Awarded May 30.

▲ Robert E. Millsap, 1133 Mission St., South Pasadena, Calif. Contract Awarded. Approx. $1,000,000. 300x610 ft. steel FACTORY Unit No. 46, SANTA MONICA, CALIF. Douglas Aircraft Co., Inc., 3000 Ocean Park Blvd., Santa Monica, Calif. Bids May 29. CD 5/25.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† Alaska — WATER TREATMENT, etc. — B.A. 6/28 — U. S. Eng., New Washington Hotel, Seattle 1, Wash., water treatment and storage facilities and sewage treatment plant at Ladd and Eielson Air Force Bases, Inv. No. 595-507-51-100. Extended date. Plans deposit $50. CD 5/18.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ † S. Birch & Sons, 1300 Aloha St., Seattle, Wash. Low Bidder. $2,033,314. ADMINISTRATION BLDG., at International Airport, ALASKA. Civil Aeronautics Admin., Anchorage, Alaska. Bids June 4. CD 5/24.

CANADA

BIDS ASKED—BUILDINGS

Ont., Scarborough—PLANT—B.A. 6/26—S. M. Connolly, 441 Queens Quay, Toronto, 2 story, 160x450 ft., rein.-con., structural steel electronics plant, for Govt. of Canada, Defence Constr. Ltd., 70 Lyon St., Ottawa, Ont. Plans deposit $100. A. C. Facey, 991 Bay St., Toronto, archt.-e. A. Cross, 991 Bay St., Toronto, engr. CD 1/23.

Ont., Napanee—COLLEGIATE—B.A. 7/2—R. F. Hunter, Napanee, collegiate, for District Collegiate Institute, Napanee, Ont. Plans deposit $50. H. H. Roberts, Westport, Ont., archts.

▲ Que., Beauharnois—PLANT—Bids Asked—St. Laurence Alloys and Metals Ltd., 7 Canal Rd., Beauharnois, Que., 240x175 ft., 70 ft., rein.-con., structural steel, brick plant addn. $2,000,000. CD 5/7.

CONTRACTS—BUILDINGS

Anglin Norcross Quebec Ltd., 802 W. Sherbrooke St., Montreal, Que. Contract Awarded, $350,000, SHOP REPAIRS, MONTREAL, QUE. Canadian Pacific Ry. Co., Windsor Station, Montreal, Que. L. M. Laffoley, c/o owner, engr.

PROPOSED PROJECTS

WATER SUPPLY

▲ La., Abbeville—City, defeated $1,275,000 bonds, WW imprvs. CD 4/11.

SEWERS, WASTE DISPOSAL

Calif., Porterville—City, City Hall, $450,000 bond election June 26, imprv. sewerage sys.

Tex., Houston—City, City Hall, Dallas Ave. Storm Sewer, $214,000; Sect. 5, north side sanitary sewerage sys. expansion, $475,000. L. Fugate, city engr. CD 6/6.

▲ Tex., Houston—City, Oscar Holcombe, mayor, City Hall, voted bonds, sanitary sewers, east of Helmers and north of Liberty Rd., $3,500,000; storm sewers from Fulton St. east to HE & WT Ry. from Burlington Rock Island tracks north to Berry Road, etc., $1,850,000; storm sewers from Scott to Baltimore from GH & SA Ry. to OST, $700,000; storm sewers from Ella Blvd. to Shepherd Dr. from Rosslyn to Suebarnett, $500,000; storm sewers from Buffalo Dr. to Welch St. from Taft to Heiner-Bagby, $250,000;

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Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2038 Addison, Houston 8, Tex.
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storm sewers from Hayes St. north to Burlington Rock Island Ry. and from Little White Oak Bayou to Irvington Blvd., $700,000; storm sewers Sayers East to Lockwood Dr. from Liberty Road North to Hunting Bayou, $900,000; storm sewers from GH & H Ry. north to Buffalo Bayou, Brays Bayou west to Greenwood, $200,000; storm sewers between Abernathy and Solo Sts. from Clinton Dr. to Liberty Rd., $800,000; storm sewers between Kirby Dr. and H & TC Ry., $1,700,000; storm sewers 8 and 12 Sts. between Studewood and Ashland Sts., $400,000; sanitary sewers Helmers and Shepherd Dr. from Link Rd. north to City limits, $1,000,000; sanitary sewers in area south Buffalo Bayou and east GC&SF Ry., $500,000; sanitary sewers in area west of Shepherd Dr. and north of Buffalo Dr., $1,000,000. L. Fugate, city engr. CD 4/19.

▲ Que., Montreal—Municipality, tributary collector sewer, $10,000,000. Henri Gibeau, City Hall, city engr.

BRIDGES

▲ Tex., Houston—City, City Hall, bonds, bridges and grade separation, $1,500,000. L. Fugate, city engr. CD 4/19.

STREETS AND ROADS

Ill., Chicago—City, City Hall, Zone 2, paving 41 St. from Wallace to Normal Sts., $200,000; 74 St. paving between Damen and Ashland Sts., $205,000; Randolph St., improvt., paving from Michigan to Ogden and from Ogden to Washington Sts., $500,000. CD 4/25/45.

Mich., Ann Arbor—City, voted $495,000 bonds May 29, repave 17 streets and repair curbs throughout city. CD 4/18.

N. J., Trenton—City, Dpt. P. Wks., City Hall, repaving sections 7 streets to include Grand, Anderson, Second and W. Hanover Sts., Greenwood, Oak Lane and Hoffman Aves., also service drives at Donnelly Municipal Hospital, $500,000. Joseph E. English, City Hall, city engr. CD 8/27/48.

O., Toledo—City, City Hall, street improvs., Berdan Ave., $152,000; Edgewater Dr., $120,000; 103 St., $90,000; Belmont Ave., $23,000; Hawley St., $35,000; Franklin Ave., $49,500; Huron St., $50,100; Upton Ave., $229,064, LaGrange St., $175,000. M. J. Curtis, city street div. engr.

▲ Tex., Houston—City, City Hall, voted bonds, major street and highway construction and paving $3,000,000; permanent type paving streets and alleys, $1,000,000; gravelling secondary streets $500,000. L. Fugate, city engr. CD 4/19.

▲ Manitoba—Dpt. P. Wks., Winnipeg, 98 mi., highway from Winnipeg to Ontario border, paved part of Trans-Canada Highway, $7,390,000. CD 11/8/48.

AIRPORTS

† O., Youngstown—AIRPORT IMPRVS.—U. S. Eng., Madison Ave. and 8 St. W., Huntington, W. Va., convert Youngstown Municipal Airport to jet fighter base, alert shangar, maintenance and plane storage hangar, barracks, dining halls, etc., power, water, sewage facilities northwest of present airport.

▲ Tex., Houston—AIRPORT—City, City Hall, voted bonds, airport, $1,000,000. N. L. Fugate, city engr. CD 4/19.

▲† Tex., Waco—SUPERSONIC TRAINER, etc.—U. S. Eng., 1127 T & P Bldg., Fort Worth, Tex., supersonic trainer bldg. and maintenance docks, at Connally Air Force Base, $4,000,000-$5,000,000.

PUBLIC BUILDINGS

▲ Calif., Daly City—SCHOOL—Jefferson Unified High School Dist., Daly City, voted $1,300,000 bonds, high school near Skyline Blvd. and Pedro Rd. Mario Ciampi, 425 Bush St., San Francisco, archt. CD 6/11.

▲ Conn., Darien—SCHOOL—Town, S. P. Marland, supt., Junior High School addn., Hollow Tree Ridge Rd. $1,000,000.

Conn., New Britain—SCHOOL—City Supt. Schools Hillside Pl., plans by Emilio John Di Rienzo, 57 Gramatan Ave., Mt. Vernon, N. Y., brick, steel, concrete Chamberlin School, $500,000. Warren S. Holmes Co., 220 Old Tower Bldg., Lansing, Mich., consult. engr. CD 7/10/50.

Ind., South Bend—SCHOOL—South Bend School Bd., 228 S. St. Joseph St., plans by Andrew A. Totis, 2158 Portage St., John Adams High School addns. $500,000.

Ind., West Newton—SCHOOLS—Decatur Township School System, Fred O. Butler, trustee, West Newton, 2 grade schools, one at Mars Hill and other at West Newton, $850,000.

Minn., Kennedy—SCHOOL—Bd. Educ., Mrs. Verta Johnson, clk., voted $600,000 bonds, 1 story, school, Grosz & Anderson, Grand Forks, N. D., archts.

▲ Mo., Kansas City—HOUSING—Kansas City Housing Auth., City Hall, F. D. Byars, chn., Zone 6, plans by Marshall & Brown, 1016 Baltimore St., Zone 6, 232 apartment units, Riverview Park Apartments, on 10 acre tract, North Pasco to North Terrace Park, north of Missouri Ave., $2,500,000. CD 1/23.

Neb., Superior—SCHOOL, etc.—Bd. Educ., Superior, defeated $680,000 bonds, high school and remodeling present bldg. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt.

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▲ **N. C., Marion**—SCHOOLS—McDowell Co. Bd. Educ., Marion, voted bonds, schools. $1,000,000. CD 4/19.

O., Toledo—BUILDING—Bldg. Comn., Juvenile Court & Child Study Institute, plans by Bellman, Gillett & Richards, 518 Jefferson St., 2 and 3 story, T-shaped, 73,500 sq. ft. building with penthouse gymnasium with 160 ft. frontage on 10 St., 86 ft. frontage on Michigan St. $1,500,000. CD 11/25/49.

▲ **Pa., Charleroi**—HOSPITAL—Charleroi Monessen Hospital, Charleroi, plans by Hoffman & Crumpton, 130 7 St., Pittsburgh, 4 story, bsmnt., brick, steel hospital addn. $1,310,000.

▲ **Tex., Dallas**—HOUSING—Dallas Housing Auth., 2525 Lucas Dr., plans by Howard R. Meyer, 2907 Maple St., 295 low cost housing units, Tex. 9-8, brick exterior, concrete slab fdn. $2,205,000. CD 12/2/49.

▲ **Tex., Houston**—CIVIC CENTER, etc.—City, City Hall, voted bonds, civic center, $1,000,000; public health and welfare, $500,000. L. Fugate, city engr.

▲ † **Tex., Port Neches**—PLANT—U. S. Govt., c/o Rubber Reserve Board, Port Neches, addnl. plant facilities for mfg. of butadine. $4,000,000. Neches Butane Products Co. lessees and operators.

▲ **Tex., San Antonio**—HOUSING—San Antonio Housing Auth., 400 Labor St., San Antonio, plans by Ford & Rogers, Willow Way and Phelps & De Wees and Simmons Major Bldg., 400 low-cost housing units Tex. 6-6. $3,000,000. J. W. Beretta Engineers, Inc., 902 Travis Bldg., San Antonio, consult. engr. CD 10/24/49.

▲ **Wis., Milwaukee** — HOUSING — Milwaukee Housing Auth., 844 N. Market St., Zone 2, Hillside Housing addn., incl. 568 dwelling units, $6,000,000.

▲ **Alta., Edmonton**—INSTITUTE—Dpt. Education, Edmonton, Institute of Technology and Art, Approx. $1,000,000.

Alta., Selkirk—HOSPITAL — Municipality, enlarging hospital, $500,000.

Man., Portage La Prairie—HOSPITAL—Province of Manitoba, Dpt. Health, Winnipeg, 75-bed hospital, $540,000.

Ont., Stratford—HOME—County Council, Perth, plans by Jenkins & Wright, 42 Albert St., old folks home addn. $500,000. CD 3/20.

▲ **Ont., Toronto**—HOUSING—City, City Hall, housing development at present Woodbine Race Track with low-rental apartments, shopping center and thru express road to connect with present Lakeshore Hy. $13,000,000. Tracy D. Le May, Toronto comm planning.

COMMERCIAL BUILDINGS

▲ **Calif., Alameda** — APARTMENT - DEVELOPMENT — Congress Construction Corp., c/o Alameda Bayside Constr. Corp., 1516 Oak St., Alameda, plans by Spencer & Ambrose, Room 801, 251 Kearny St., San Francisco, Calif., commercial apartment development on 41 acre site on bay, south of here, plus shopping center, yacht harbor, etc. $14,500,000.

▲ **Ia., Sioux City**—HOSPITAL—Lutheran Hospital, 2714 Pierce St., plans by John Latenser & Sons, 1307 Farnam St., Omaha, Neb., hospital addn. $1,235,700.

Mass., Chicopee—STORES—G. P. Morgan, Riverview Dr., Norwalk, Conn., plans by Anthony F. Pimental, designer, 159 Waite Ave., stores, retail development, supermarket, drug store, restaurant, laundromat, etc. $500,000.

▲ **Mo., St. Louis**—HOUSING—St. Louis Real Estate Bd. and South Broadway Merchants & Manufacturers Assn., c/o Clarence Lang, 705 Chestnut St., Zone 1, 2 and 3 story multiple housing, bounded by Broadway, Sidney St., 12 Blvd. and proposed 3rd St. interregional hy. $2,000,000.

▲ **N. J., Newark**—APARTMENT—Franklin Bldg. Corp., c/o Isadore Naftali, archt., 312 High St., 10 story apartment, incl. 109 units, 795-809 Elizabeth Ave. $1,000,000.

▲ **N. Y., Bayside**—HOUSES—Oakes Land Corp., c/o A. H. Salkowitz, archt., 37-60 82 St., Jackson Heights, 192 two story family houses in area bounded by Easthampton Blvd., 50 Ave., 53 Ave., 231 St., 56 Ave., Horatio Parkway and Hoxie Dr. $1,546,000.

▲ **N. Y., New York**—GARAGE—Columbia University, 116 St. and Broadway, Zone 27, plans by Henry C. Brockman, One Fifth Ave., Zone 3, 6 story garage on block bounded by Broadway, Amsterdam Ave., W. 68 and W. 69 Sts. $2,270,000.

N. Y., New York—SCHOOL, etc.—Sts. Philip & James Roman Catholic Church, 3360 Boston Rd., Zone 67, plans by William J. Boegel, 12 E. 48 St., Zone 17, 4 story school and rectory, 212 St. and Boston Rd. $400,000.

▲ **N. Y., New York**—OFFICE—Webb & Knapp, 383 Madison Ave., Zone 17, 44 story office bldg. on site of Marguery Hotel, on block bounded by Park Ave., 47 St., Madison Ave. and 48 St. $45,000,000.

▲ **Tex., Fort Worth**—HOSPITAL—Dr. J. M. Lyle, Commercial Standard Bldg., plans by Preston M. Geren, 905 N. P. Anderson Bldg., Ft. Worth, 10 story 100-bed hospital addn. and 75 doctors offices, W. Tucker and Ballinger Sts. $2,500,000. CD 5/14.

▲ **Tex., Houston**—DWELLINGS—J. S. Norman Building Corp., 4815 Richmond Rd., 55 brick veneer dwellings, concrete slab fdn., east of Bingle Rd., $697,500.

▲ **Tex., Waco**—HOUSING—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, construct, manage, finance Air Force Base Housing, Connaly Air Force Base. H. B. Gieb & Assoc., 2719 McKinney St., Prof.

(Continued on page 96)

OAK RIDGE BUILDS—

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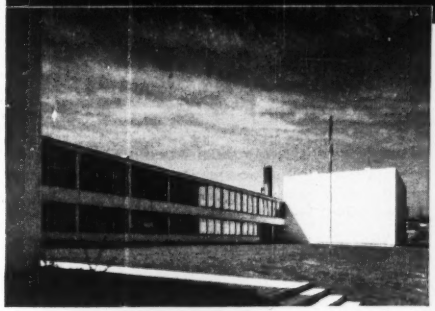

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BUILDERS - PROVIDENCE

(Continued from page 94)

Bldg., Dallas, and Yandell, Cowan & Love Engineering Co., Danciger Bldg., Fort Worth, archts. and engrs. $2,000,000. CD 2/6.

Alta., Edmonton—HOUSES—G. W. Golden Constr. Ltd., 8925 82 Ave., fifty houses in Strathearn subdivision, $500,000.

▲ Man., St. Boniface—HOSPITAL WING—Oblate Sisters, 621 Aulneau St., new Hospital wing, $4,000,000.

INDUSTRIAL BUILDINGS

▲ Ark., Jones Mill (Br. Sta. Malvern)—PLANT—General Motors Corp., General Motors Bldg., Detroit, Mich., aluminum casting plant. $5,000,000. CD 2/8.

▲ Calif., Sacramento—PLANT—Proctor & Gamble Mfg. Co., Gwynne Bldg., Cincinnati, O., 6 story, processing plant and 2 story production plant. $10,000,000.

▲ Ga., Rockmart — PLANT — Southern States Portland Cement Co., Rockmart, cement plant addns. $5,000,000.

▲ Kan., Topeka—PLANT—Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O., truck and military tire production plant on 70 acres, $10,000,000. CD 2/7/45.

▲ Ky., Louisville—PLANT—Aetna Oil Co., Inc., 1202 S. 3 St., plant addn. $6,000,000.

▲ Ky., Louisville — PLANT — Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., plant addn. $9,000,000.

▲ La., Lake Charles—PLANT—American Petrochemical Corp., c/o Firestone Co., 6702 Supply Row, Houston, Tex., chemical plant. $10,000,000.

▲ Mo., Kansas City—PLANT—Black, Sivalls & Bryson, 7800 E. 12 St., Kansas City 3, Mo., 80,000 sq. ft. plant expansion, warehouse, $1,000,000.

▲ O., Columbus — FACTORY — Westinghousee Electric Corp., J. H. Ashbaugh, vice pres., Electric Appliance Div., Mansfield, plans by Ebasco Services, Inc., 2 Rector St., New York, N. Y., 1,900,000 sq. ft., brick jet engine components factory, W. Broad St., U. S. 403, facing Phillipi Rd., 1 mi. west of here. $20,000,000.

O., Dayton — FACTORY — Globe Industries, Inc., Max Isaacson, pres., 125 Sunrise Pl., 100,000 sq. ft. electric motor factory on 17 acre site on Webster St., north of Leo St. $500,000.

▲ O., Dayton—FACTORY—Master Electric Co., 126 Davis St., 4 story, 90,000 sq. ft. factory addn. and 2 story separate factory bldg. $1,000,000.

▲ O., Reading—FACTORY—Liebel-Flarsheim Co., Williamson Bldg., Cincinnati, factory to mfg. electro-medical and electro-surgical equip. $1,000,000.

▲ Pa., Lemoyne—FACTORY—American Can Co., 100 Park Ave., New York, N. Y., factory for mfg. cans. Approx. $1,000,000.

†Pa., Pottstown—FACTORY—Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O., 3 story, 140x200 ft. warehouse and office; 1 story, 62x240 ft. factory to produce resins, 200 ft. east of present resin plant. $5,500,000. CD 1/31/45.

▲ S. C., Columbia—PLANT—Lock Joint Pipe Co., 150 Rutledge Ave., East Orange, N. J., pipe mfg. plant. $1,000,000.

▲ Tex., Dallas—PLANT—Temple Emanu-El, 1900 S. Blvd., plans by Eric Mendelsohn, 627 Commercial St., San Francisco, Calif., plant along Turtle Creek. $1,500,000.

▲ Tex., San Antonio—REFINERY—W. H. Olmstead & C. B. Fulton, c/o Golden West Oil Co., 516 N. San Marvos St., aviation gasoline refinery, $8,801,000; alkalyte refinery unit, $3,124,000. Universal Oil Products Co., 810 S. Michigan Ave., Chicago, Ill., consult. engr. CD 5/23.

▲ Wyo., Green River—Westvaca Chemical Div., of Food Machinery & Chemical Corp., Fisher Bldg., Detroit, Mich., constr. Trona Project to process trona into soda ash. $15,000,000. John D. Anderson, c/o owner, engr.

▲ Ont., Hawk Lake (P.O. Kenora)—PLANT—A. Allyn Rossen, Rossen Eng. & Constr. Co., Ltd., Austin St., Winnipeg, Man., cement plant. $1,500,000.

UNCLASSIFIED

Nebraska—RURAL DISTRIBUTION LINES—Cedar-Knox County Rural Public Power Dist., Hartington, rural distr. lines and sys. imprvs., Cedar and Knox Counties. $470,000. Henningson, Durham & Richardson, Standard Oil Bldg., Omaha, consult. engrs. CD 4/18.

▲ Texas and Arkansas—PIPE LINE—Gulf Oil Corp., Gulf Bldg., Houston, Tex., 185 mi. 10-in. petroleum products pipe line from Lufkin, Tex., to El Dorado, Ark., $3,750,000; expansion feeder sys. between Port Arthur, Tex., and Lufkin, Tex., $750,000.

Tex., Houston—TRAFFIC SIGNAL SYSTEM—City, City Hall, voted bonds, electric traffic signal sys. $500,000. L. Fugate, city engr. CD 4/19.

Wyoming—RURAL DISTRIBUTION LINES—Rural Electric Co., Pine Bluffs, 100 mi. rural distr. lines, 18 mi. tie lines and completing previously approved construction, Laramie Co. $520,000. Flora Eng. Co., 1717 E. Colfax Ave., Denver, Colo., consult. engr.

▲ Manitoba — RAILWAY — Canadian National Rys., B. Wheelwright, ch. engr., 360 McGill St., Montreal, Que., 155 mi. railway from Sherridon to Lake to serve Lynn Lake mining development, incl. long bridge over Churchill River. Approx. $10,000,000. G. F. Drummond, c/o owner, archt. R. O. Stewart, c/o owner, engr. CD 6/6/49.

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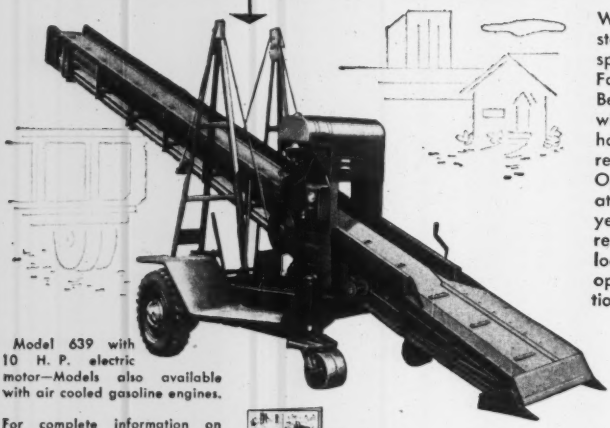

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FROM THE EIMCO FILE T256

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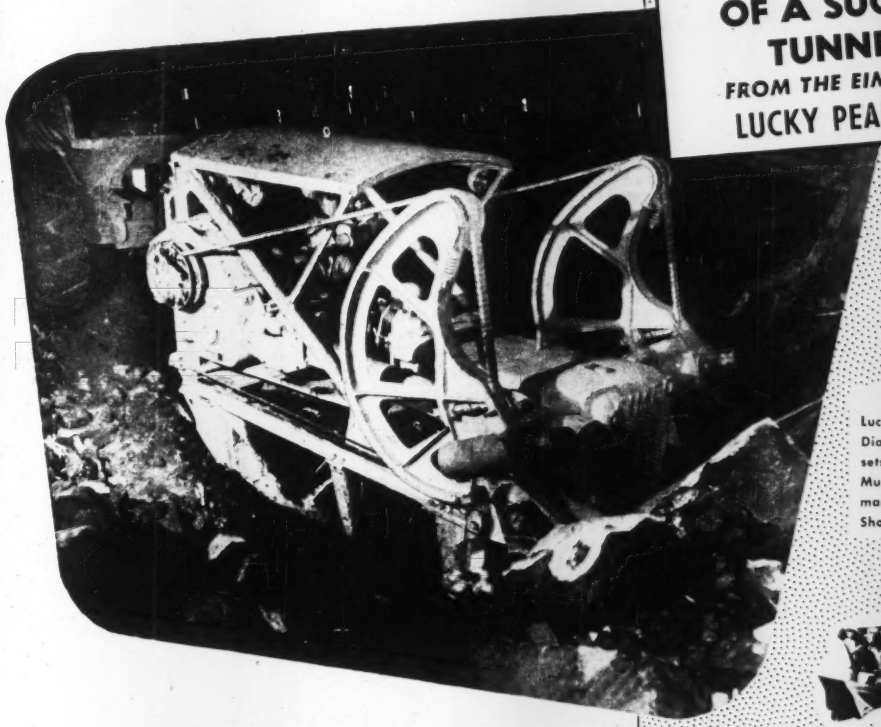

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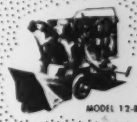
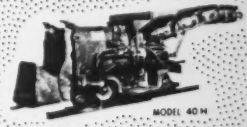


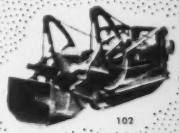
MODEL 12-B

MODEL 21



MODEL 40-H

MODEL 15



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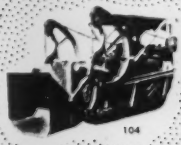

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
June 25, New Hampshire

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **M. A. Gammino Constr. Co.**, 728 Valley St., Providence, R. I. Low Bidder. $2,582,000, runway etens., Naval Air Station, Spec. No. 28172, QUONSET, R. I. Pub. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids May 29. CD 5/2.

LOW BIDDERS—BUILDINGS

▲ **Jefferson Constr. Co.**, 75 First St., Cambridge, Mass. Low Bidder. $3,087,198, HOUSING, Proj. 23-1, Holyoke St., LYNN, MASS. City of Lynn Housing Auth., 58 Andrews St., Lynn, Mass. Bids May 29. CD 5/10.

▲ **A. E. Stephens Co.**, 1200 Main St., Springfield, Mass. Low Bidder. Alt. 1, $1,331,579; plus $98,000; Alt. 2 minus $50,000. B/A-D 109, AUDITORIUM at University of Connecticut, STORRS, CONN. State, State Office Bldg., Hartford, Conn. Bids June 1.

CONTRACTS—BUILDINGS

▲ **Harris Structural Steel Co., Inc.**, 419 4 Ave., New York 16, N. Y., Contract Awarded, $3,889,002, est. $3,915,843, Contr. B-2, steel superstructure, for single and double deck elevated hy. structure, Boston Central Artery; **Berke Moore Inc.**, 8 Newbury St., Boston, Mass., $775,855, est. $767,171, Contr. B-3, electrical work, Boston Central Artery deck, Boston (Charlestown), MASSACHUSETTS. Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston, Mass. Bids Apr. 17. CD 3/29.

James S. Kelliher, 1245 Hancock St., Quincy, Mass. Contract Awarded, $768,446, HOSPITAL addn., incl. connecting passage. Proj. Mass 30 (C), STONEHAM, MASS. New England Sanitarium & Hospital, 5 Woodland Rd., Stoneham, Mass. Awarded May 28. CD 5/11.

W. J. Mengin, Inc., 51 Elm St., Naugatuck, Conn. Contract Awarded, $841,108, Contr. 12, POWER PLANT STRUCTURES, WALLINGFORD, CONN. Boro. Electric Wks., Washington St., Wallingford, Conn. Bids May 22.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 26, Maryland July 3, New Jersey
STREETS AND ROADS
June 26, Maryland July 3, New Jersey

† **D. C., Wash.**—B.A. 6/26—Bureau of Indian Affairs Branch Buildings & Utilities, Interior Bldg., sewer lines, ground absorption field and remodeling septic tank.

N. J., Linden—B.A. 6/27—Linden Roselle Sewerage Auth., Council Chambers, City Hall, Linden, constr. Contr. No. III, dock, outlet chamber and dredging of pollution abatement project. Plans deposit $20. Alexander Potter Assoc., 50 Church St., New York, 7, N. Y., consult. engrs.; adv. ENR 5/17. CD 2/18/49.

† **N. Y., Harrison**—RUNWAYS—B.A. 6/27—National Guard Bureau, Acting U. S. Property & Disbursing Officer for New York State Arsenal, 201 64 St., Brooklyn, Zone 23, exten. airport runway at Westchester Airport. Extended date. CD 5/23.

Pa., Chester—B.A. 6/28—At office Clarence L. Conner, exec. mgr., Chester Municipal Auth., Fifth and Welsh Sts., c.i. pipe, pipe fittings and appurtenances for reinforcement of water distr. sys., Contrs. 39, 40 and 41. Plans deposit $40. Albright & Friel, Inc., 121 S. Broad St., Phila., Zone 7, consult. engr., adv. ENR 5/31.

BIDS ASKED—BUILDINGS

† **N. J., Earle**—BUILDING—B.A. 6/25—Dist. P. Wks. Office, Third Naval Dist., Federal Office, 90 Church St., New York, 7, N. Y., building construction and repairs Naval Ammunition Depot, Spec. 28807. Plans deposit $20.

▲ **N. J., Fort Monmouth**—HOUSING—B.A. 6/25—Dpt. Army, 121 N. Broad St., Phila., Pa., construct, manage and finance, housing, $4,800,000. Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., archts. CD 10/19/50.

▲† **N. Y., Patchogue** — LABORATORY — B.A. 6/25 — U. S. Atomic Energy Comm., Upton, laboratory Bldg. 2 at Brookhaven National Laboratories. $1,000,000. CD 12/12/46.

† **N. Y., St. Albans**—HOSPITAL ALTERATIONS, etc.—B.A. 6/25—Pub. Wks. Office, Third Naval Dist., 90 Church St., New York, Zone 7, alterations, addns. at U. S. Naval Hospital, NOY 24406, Spec. No. 26662. Plans deposit $30.

▲ **N. Y., Tuckahoe**—SCHOOLS—B.A. 6/25—Bd. Educ. Town of Eastchester, Stewart Pl., Tuckahoe, high school addn., Stewart Pl., $967,000; elementary school, Mill Rd. at Eastchester, $989,000; Greenvale School addn., William St., at Eastchester, $358,000. CD 9/12.

▲ **Pa., Chester**—HOUSING—B.A. 6/25—Chester Housing Auth., Chester, housing, 9 and Tilghmans Sts. $1,000,000. G. Morris Whiteside, 2nd, Sharon Hill, archts. Damon & Foster, Sharon Hill, engrs. CD 10/25/50.

Md., Aberdeen—SCHOOL—B.A. 6/26—Harford Co. School Bd., Coutland St., Bel Air, 1 and 2 story, brick, steel Aberdeen Junior-Senior High School, $500,000. Plans deposit $35. Gaudreau & Gaudreau, 330 N. Charles St., Baltimore, archts. J. L. Faisant & Assoc., 21 W. 25 St., Baltimore, struct. engrs. Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, mechl. engr. CD 9/13.

N. Y., Hyde Park—SCHOOL—B.A. 6/26—School Dist. 1, elementary school. $700,000. Perkins & Will, 309 W. Jackson St., Chicago 6, Ill., archts. CD 11/10.

† **N. Y., New York**—BUILDING, etc.—B.A. 6/26—Veterans Admin., Munitions Bldg., Wash. 25, D. C., constructing, finishing complete addns., alterations to Building 1, Wing C (addn. approx. 121,000 cu. ft.), for Veterans Admin. Hospital at Bronx, Spec. No. 5179, Spec. No. 2-4151.

▲ **Pa., Glenshaw**—SCHOOL—B.A. 6/26—School Dist., Shaler Twp., Glenshaw, 2 story, brick, concrete, steel irregular Junior-Senior High School. $1,300,000. Charles Edward Stotz, 801 Bessemer Bldg., Pittsburgh, archts. CD 11/10/50.

▲ **Pa., Pittsburgh**—GARAGE—B.A. 6/28—Pittsburgh Parking Auth., City County Bldg., open deck, concrete, steel parking garage, 3 and 4 Aves., Market and Wood Sts. $1,500,000. Hoffman & Crumpton, Century Bldg., archts. CD 10/28/49.

Pa., Revere—SCHOOLS—B.A. 6/28—State Public School Building Auth., 1400 N. Cameron St., Harrisburg, secondary school bldg. for Palisades Joint School Bd. Plans deposit $35., H. F. Everett & Assoc., Commonwealth Bldg., Allentown, archts. C. R. Greiner, c/o owner, ch. engr.

SOON LETS CONTRACT—BUILDINGS

▲ **N. J. Fort Dix**—APARTMENTS—B.A. 6/22—Dpt. Army 121 N. Broad St., Phila., Pa., soon lets contract construct, manage and finance garden apartments, $2,000,000. Louis M. Stuber, 2092 Morris Ave., Union, N. J., archt. CD 9/6/50.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Charles F. Vachris, Inc.**, 9018 Ditmars St., Brooklyn, N. Y., Low Bidder, $2,779,972, est. $2,855,000. 3 structures and 0.28 mi. rein-con. pavement on Van Wyck Expressway, incl. 105 ft. span concrete arch grade separation structure at Union Turnpike (westbound) a through plate girder grade separation structure at Grand Central Parkway (south-bound) a through plate girder structure at Independent Subway Yards, Queens Co.; **Horn Constr. Co., Inc.**, Merrick, N. Y., $198,446, est. $238,000, 54 ft. concrete encased I-beam grade separation structure at intersection of Sagtikos State Parkway and Long Island R. R. between Deer Park Ave. and Fifth Ave., Suffolk Co., NEW YORK P. Wks., Albany, N. Y. Bids June 6. CD 5/22.

▲ **Roman Landscape Contg. Co., Inc.**, 1611 E. 233 St., New York, N. Y. Low Bidder, $1,169,968, est. $1,180,000, landscaping, install signs and benches, etc. 5.63 mi. Bronx River Parkway southernm extens. from Story Ave. northerly to point just within Westchester Co., Bronx and Westchester Counties***Draicchio & Caradori Constr. Co., Inc.**, Lancaster, N. Y., $75,674, est. $88,000, reconstr. 0.53 mi. portion with 24 ft. b. conc. pavement Route 6 in Town Pomfret approx. 4 mi. South of Fredonia, Chautauqua Co.***Roale Eng. Co.**, 404 Court St., Utica N. Y., $353,591, est. $392,000, reconstr. with c. conc. pavement 22 ft. wide 3.35 mi. portion of Route 162 from point approx. 500 ft. southeast of Charlestown Four Corners then northwesterly to approx. 2,000 ft. north of Cemetery Lane, Montgomery Co.

Serafini Constr. Co., Inc., Conklin Rd., Binghamton, N. Y., $906,358, est. $967,000, reconstr. with 44 ft. c. conc. pavement 5.85 mi. Route 414 between the Schuyler-Seneca County line and Lodi, incl. rein-con. arch structure 279 ft. long, Seneca Co.***Hudson Contg. Corp.**, 139 St. and N. Conduit Ave., South Ozone Park, N. Y., $1,407,038, est. $1,662,000, paving with 50 ft. c. conc. pavement 4.76 mi. previously graded sect. of Northern Sagtikos State Parkway extens., approx. 900 ft. north of Crookes Hill Rd. southerly to Southern State Parkway, near Ackerson Blvd., Suffolk Co.***C. D. Murray Co., Inc.**, Syracuse, N. Y., $539,030, est. $610,000, reconstr. 4.7 mi. portion Route 96 southeasterly from Trumansburg to point approx. 3,100 ft. southeast of intersection with County Road 142, Tompkins Co. NEW YORK Dpt. P. Wks., Albany, N. Y. Bids June 6. CD 5/22.

† **James D. Morrissey, Inc.**, 9119 Frankford Ave., Phila., Pa. Low Bidder, $719,852 alert and parking aprons, approaches and appurtenances, McGuire Aire Force Base, FORT DIX, N. J. Dpt. Army, 121 N. Broad St., Phila., Pa.

LOW BIDDERS—BUILDINGS

Conn Welding & Machine Co., 108 Croton Ave., New Castle, Pa. Low Bidder, $183,644, repair Route 356 bridge over railroad tracks, Connoquenessing Creek and streets, Butler Co. PENNSYLVANIA. State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Pa. Bids June 8. CD 5/22.

McCrady Constr. Co., 304 Ross St., Pittsburgh 19, Pa. Low Bidder, **$418,891**, 4,309 ft. rein.-con. highway, incl. plate girder bridge, T. R. 380 and 80, Westmoreland Co., PENNSYLVANIA. State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Pa. Bids June 8. CD 5/22.

Stofflet & Tillotson, 2043 Eastburn Ave., Phila., Pa. Low Bidder, **$545,600**, COURT HOUSE annex and GARAGE addn., MEDIA, PA. Comrs. Delaware Co., Media, Pa. Louis H. Doane, Penna. R. R. Bldg., Wilmington, Del., engr. Bids June 6. CD 4-27.

Construction Corp of Pennsylvania, 2237 Bryn Mawr Ave., Phila., Pa. Low Bidder, **$134,000**, sewage disposal plant, READING, PA., City, City Hall, Reading, Pa. Robert S. Chubb, city engr. CD 8/2/45.

▲ **Mullan Cotng. Co.**, 3945 Greenmount Ave., Baltimore 18, Md. Low Bidder, **$1,989,000**, 2 and 3 story, cinder block, brick Annapolis Junior High SCHOOL, Constitution Ave., ANNAPOLIS, MD. Anne Arundel Co. Bd. Educ., 207 Hanover St., Annapolis, Md. Bids May 22. CD 4/19.

▲† **Curtis Builders, Inc.**, 1906 M St. N.W., Wash., D. C. Low Bidder, **$1,214,000**, Research LABORATORY Bldgs. 74 and 75 at Naval Research Laboratory, NOY 24044, Spec. 26353, WASH., D. C. Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids May 31. CD 5/3.

CONTRACTS—HEAVY CONSTRUCTION

† **Louis Loughi & Sons, Inc.**, P. O. Box 580, Glens Falls, N. Y. Contract Awarded, **$159,245** exten. utilities at U. S. Military Academy, Eng. 30-075-51-628, WEST POINT, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids May 23.

▲ **Poirier & McLane Corp.**, 33 W. 42 St., New York, N. Y., Contract Awarded, **$1,840,618**, Sect. 8B, Route 4 Parkway 0.339 mi. from Route 28 to Galloping Hill Road incl. bridges at Galloping Hill Rd., Michigan Ave., Rahway Valley R. R. and Market St., Kenilworth, Union Co., NEW JERSEY. State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J. Bids May 15, awarded 6/11. CD 5/23, under LB.

† **American Dredging Co.**, 12 S. 12 St., Phila., Pa. Contract Awarded, **$993,909**, dredging Marcus Hook Anchorage, Delaware Co., Inv. No. CIVENG 35-109-51-67, PENNSYLVANIA. U. S. Eng., 121 N. Broad St., Phila. 1, Pa. Bids May 9. CD 5/21, under LB.

Larry Constr. Co., 618 Pacific St., McKeesport, Pa. Contract Awarded, **$71,733**, est. $85,000, street imprvs., W. Grant Ave., Duquesne, PITTSBURGH, PA. Allegheny County, Dpt. P. Wks., County Office, Pittsburgh, Pa. CD 12/15/43.

CONTRACTS—BUILDINGS

Joseph Realties, Inc., c/o Greenberg & Ames, archts., 565 Fifth Ave., New York, Zone 17, N. Y. Owner Builds. **$800,000**. 13 story APARTMENT, Avenue of Americas and Houston St., NEW YORK, N. Y.

▲ **Wark & Co.**, 1920 Sansom St., Phila., Pa. Contract Awarded, **$1,373,300**, 1 story, 360x575 ft. steel, masonry PLANT expansion, MORTON, PA. Piasecki Helicopter Corp., 100 Woodland Ave., Morton, Pa. Bids May 15. CD 6/7, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 27, Louisiana
STREETS AND ROADS
July 6, Tennessee

† **N. C., Fort Bragg**—OMNI-DIRECTIONAL RADIO RANGE—B.A. About 6/26—U. S. Eng., 308 Customhouse, Wilmington, construct VHF omni-directional-radio range at Pope Air Force Base, Serial No. Eng 31-075-51-14.

† **Va., Norfolk**—GENERATOR BLDG.—B.A. 6/26—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, generator bldg. at U. S. Naval Air Station, NOY 28450, Spec. 30093. Plans deposit $10.

† **Va., St. Juliens Creek**—B.A. 6/26—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, road repairs at U. S. Naval Ammunition Depot, NOY 26775, Spec. 28799. Plans deposit $10.

† **Va., Yorktown**—B.A. 6/26—Pub. Wks. Office, Headquarters Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, installing water line at Naval Mine Depot, ND 26139 Spec. 28237. Plans deposit $10.

† **Va., Yorktown**—PIER—B.A. 6/26—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk Zone 11, renewing fender piles on Pier 2 at Naval Mine Depot, NOY 26137, Spec. 28235. Plans deposit $10.

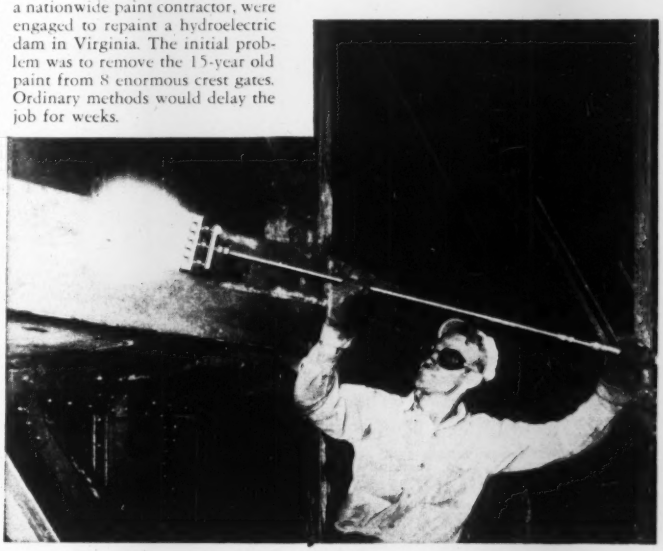
† **Tenn., Knoxville**—RUNWAY, APRON, etc.—B.A. 6/28—U. S. Eng., 303 U. S. Court House, Nashville, Zone 1, runway, apron and taxiways, McGhee-Tyson Air Force Base, Serial No. Eng 40-058-51-5. Plans deposit $25.

† **Tenn., Knoxville**—HANGAR—B.A. 6/28—U. S. Eng., 303 U. S. Court House, Nashville, Zone 1, alert hangar; readiness bldg.; mess and administration bldg.; supply bldgs.; base communication bldg.; bachelor officers quarters; dispensery, at McGhee-Tyson Air Force Base, Serial No. Eng 40-058-51-6. CD 5/1, under LB.

▲† **Fla., Pensacola**—TRAINING FIELD—B.A. About 7/2—Dpt. Navy, c/o Officer in Charge Constr., Naval

Flame cleaning speeds 'face lifting' on giant dam

MILLER CONTRACTING CO. OF OHIO, INC. located in Canton, a nationwide paint contractor, were engaged to repaint a hydroelectric dam in Virginia. The initial problem was to remove the 15-year old paint from 8 enormous crest gates. Ordinary methods would delay the job for weeks.



G. E. Hartwick, Airco Technical Sales Representative, suggested oxyacetylene flame cleaning with Series 9200 Torches and Airco Style 120 tips. Quickly and easily applied, the intense heat of the flame cockled the old paint, loosened scale and drove off surface moisture in a single operation.

The Miller Contracting Co. found that a flame cleaned surface made for a better finished paint job. An executive said, "We're convinced that flame cleaning is the most efficient and economical method of preparing steel surfaces prior to painting. We now use it almost exclusively for removing rust and scale."

• • • • •

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HUNTINGTON, W. VA.

Air Station, Pensacola, jet training field at Fort Barrancas. $5,000,000. CD 2/27.

BIDS ASKED—BUILDINGS

† **Va., Yorktown**—BUILDINGS REPAIRS—B.A. 6/26—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, repairing buildings, U. S. Naval Schools, Mine Warfare, NOY 28452, Spec. 30095. Plans deposit $10.

† **Va., Yorktown**—WAREHOUSE—B.A. 6/26—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, Warehouse P-3 alterations, Naval Mine Depot, NOY 26140, Spec. 28238. Plans deposit $10.

▲ **Tenn., Chattanooga**—HIGH SCHOOL—B.A. 6/27—City, City Hall, Howard Negro High School, $2,200,000, Caton & Assoc., James Bldg., archts. CD 3/26.

Ky., Madisonville—CHURCH—B.A. 6/28—First Baptist Church, Madisonville, 2 story, 133x270 ft.; church, $500,000. Plans deposit $150, Wallace & Clemmons, 1911 Division St., Nashville, Tenn., archts. CD 2/20.

Ala., Auburn—HOUSING—B. A. 6/30—Auburn Housing Auth., 75 housing units, $755,000. CD 2/12.

Va., Norfolk—SCHOOL—B.A. About 7/2—City, City Hall, Lakehurst School, $900,000. Vernon A. Moore, 716 W. 20 St., archt.

Ky., Louisville—PLANT—B.A. 7/2—Tube Turns Inc., 224 E. Broadway, mfg. plant adn. $300,000, Jay Case, c/o owner, ch. engr.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **L. G. De Felice**, Nettleton Ave., North Haven, Conn., Low Bidder, $8,278,892, paving runways at Cecil Field, NOY 27261, Spec. 2949, JACKSONVILLE, FLA. U. S. Naval Station, Charleston, S. C. Bids June 8. CD 5/24.

▲† **Wright Constr. Co.**, 50425 Ave., Columbus, Ga. Low Bidder, $3,146,137, conversion runways at jet plane operations, Naval Air Station, JACKSONVILLE, FLA. U. S. Naval Base, Charleston, S. C. Bids June 5. CD 5/4.

▲† **Barksdale & LeBlanc**, 1835 Shada Ave., Baton Rouge, La., Low Bidder, $1,192,420, barracks mess halls, addnl. new facilities, Eng. 41-243-51-47, LAKE CHARLES, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids June 5.

▲† **U. S. Eng.**, 300 Broadway, Little Rock, Ark. rejected bids June 6, addnl. fueling facilities at Barksdale Air Force Base, Eng. 51-9, SHREVEPORT, LA. L. B. $1,578,527. CD 5/16.

LOW BIDDERS—BUILDINGS

▲† **Goode Constr. Corp.**, Builders Bldg., Charlotte, N. C., Low Bidder, $2,879,000 300 units of low-rent HOUSING for Negro tenants in Lincoln Court area, ROANOKE, VA., Roanoke Redevelopment & Housing Auth., 401 Luck Ave., Roanoke, Va. Bids June 5. CD 5/21.

▲ **Fowler-Jones Constr. Co.**, Reynolds Bldg., Winston-Salem N. C., Low Bidder, $1,197,000. Proj. N. C. 12-4, Happy Hills Gardens, (2nd group) 38 BUILDINGS, 160 dwelling units, WINSTON SALEM, N. C. Winston-Salem Housing Auth., Reynolds Bldg., Winston-Salem, N. C., Bids June 5. CD 5/11.

▲ **Dawson Engineering Co.**, 10 Gillon St., Charleston, S. C., Low Bidder, $1,279,713, tuberculosis SANATORIUM, CHARLESTON, S. C., Charleston County Council, The Center, Charleston, S. C., Bids June 6. CD 5/25.

† **Tidewater Foundation Co.**, 110 E. Bay St., Savannah, Ga., Low Bidder, $320,190, repairing post dock, PARRIS ISLAND, S. C. Dpt. Navy, Officer in Charge of Construction, Naval Base, Charleston, S. C. The McPherson Co., 408 S. Main St., Greenville, S. C., engr. Bids June 7. CD 5/11.

† **New Orleans Armature Works**, 2311 Tchoupitoulas St., New Orleans, La., Low Bidder, $231,860, furnish, install operating machinery and electrical sys. for Algiers Lock, Algiers, Inv. 51-186, Orleans Parish, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids June 5. CD 4/20.

Clement Betpouey Jr. & Co., Canal Bldg., New Orleans, La., Low Bidder, $279,027, Contrs. 1 and 2, WW imprvs., Paul E. Riviere, New Orleans, La., $148,494, Contr. 3, WW imprvs., NEW ORLEANS, LA., East Jefferson Waterworks Dist. 1, 3600 Jefferson Hy., New Orleans, La., Bids May 29.

▲ **Farnsworth & Chambers**, Box 74, Houston, Tex. Low Bidder, $2,028,228, 6 story, concrete, brick, stone HOSPITAL, NEW ORLEANS, LA. Mercy Hospital, Sisters of Mercy, 132 Annunciation St., New Orleans, La. Bids June 5.

▲† **Southeastern Constr. Co.**, Peoples Bldg., Charleston, W. Va., Low Bidder, $2,887,000, est. $3,585,000, eight BARRACKS, paving and sidewalks, FORT CAMPBELL, KY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 7. CD 5/16.

▲ **Thorp Constr. Co.**, 1900 Lincoln Ave., Evansville, Ind., Low Bidder, $1,632,500, 134 DWELLING units, Proj. Ky 12-1, 66 DWELLING units, Proj. 12-2, HENDERSON, KY., Henderson Municipal Housing Comm., Henderson, Ky. Bids June 8. CD 5/16.

Ruby Lumber Co., 53 N. Main St., Madisonville, Ky., Low Bidder, Base Bid 1 $526,822, Base Bid 2 $513,963, Base Bid 3 $515,657, Base Bid 4 $502,398, est. $547,000, one 40 HOUSING unit, one 25 HOUSING unit, MADISONVILLE, KY. Madisonville Municipal Housing Comm., Madisonville, Ky. Bids June 7. CD 5/16.

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C., Low Bidder, $4,437,500, 500 unit public HOUSING, Carroll St., NASHVILLE, TENN. Nashville Housing Auth., 701 S. 6 St., Nashville, Tenn. Bids June 5. CD 5/10.

CONTRACTS—BUILDINGS

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., Contract Awarded, $593,575. DENTAL SCHOOL, CHAPEL HILL, N. C. University of North Carolina, Chapel Hill, N. C. Bids May 24. CD 5/31, under LB.

▲ **J. W. Hunter**, Carolina Beach Rd., Wilmington, N. C., Contract Awarded, $587,800, 2 TRANSIT SHEDS.***
J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., $609,700, storage WAREHOUSES, WILMINGTON, N. C. North Carolina Ports Auth., G. W. Gillette, exec. dir. Wilmington, N. C. Bids June 5. CD 5/29.

▲ **Sid Mack & Assocs.**, 2222 W. Beaver St., Jacksonville, Fla., Contract Awarded, $1,500,000, HOUSING DEVELOPMENT, AUGUSTA, GA., Mansion Homes, c/o Winston & Co., 80 Linden Ave, N.E., Atlanta, Ga. CD 4/20.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
June 26, Ohio

▲ **Wis., Milwaukee**—B.A. 6/28—City, repairing Wisconsin Ave. viaduct, $1,000,000. Plans deposit $10. Lloyd D. Knapp, city engr. CD 12/3/43.

SOON LETS CONTRACT—BUILDINGS

▲ **Ind., Gary**—PLANT—Taylor Forge & Pipe Co., 4735 W. 14 St., Cicero, Ill., soon lets contract 75,000 sq. ft. pipe mill, $1,500,000. Shaw, Metz & Dolio, 208 S. LaSalle St., Chicago, 4, Ill., archts. CD 4/30.

LOW BIDDERS—HEAVY CONSTRUCTION

Phillip C. Kaiser, 311 Highland Ave., Portage, Wis., Low Bidder, $60,569, grading, draining 7.923 mi. S.T.H.35-Webb. Lake Rd. S.T.Hy. 77, Proj. S 0759(1), Contr. 1, Burnett Co.; **I. H. Pertzsch**, Onalaska, Wis., $158,000, c. conc. 0.833 mi. S.T. Hy. 35 and U. S. Hy. 53, La crosse-Holmer Rd., City of Onalaska, Proj. U 5101(8), Contr. 1, La Crosse Co.***rejected bids bit. 1.752 mi. Eau Claire-C.T.H. "P" Road C.T.Hy. "Q," Proj. S0150(3), Contr. 1, Eau Claire Co., L.B. $82,208, WISCONSIN State Hy. Comm., State Office Bldg., Madison, Wis. Bids June 5. CD 5/21.

M. Thomsen, Kenosha, Wis., Low Bidder, $136,926, c. conc. paving streets, RACINE, WIS. City, Racine, Wis. Bids June 1. CD 5/23.

Globe Constr. Co., 312 Peck Bldg., Kalamazoo, Mich., Low Bidder, $148,894, b. conc. resurf. 6.589 mi. US 27, Proj. M 23-4, C3, M 23-26, C4; F 13-50, C1, Eaton and Calhoun Counties***; **General Paving Constr. Co.**, 235 Union St. S.E., Grand Rapids, Mich., $155,817, bit. aggregate surf. 9.228 mi., M 33, Proj. M 6-24, C3, SS 65-21, C5, Arenac and Ogemaw Counties***; **Hodgkiss & Douma**, Petoskey, Mich., $73,663, b. conc. surf. 3.206 mi. on U.S. 27, Proj. F 29-6, C3, F 37-7, C3, Isabella and Gratiot Counties***; **Ann Arbor Constr. Co.**, Ann Arbor, Mich., $307,577, b. conc. surf. 15.09 mi. M 59, Proj. M 47-26, C4, M 63-45, C11, Livingston and Oakland Counties***; **Detroit Asphalt Paving Co.**, 702 Transportation Bldg., Detroit, Mich., $457,029, b. conc. surf. 5.107 mi. US 25, Proj. F 82-190, C1, F 130 9, Wayne Co., MICHIGAN. State Hy. Comm., 222 Townsend St., Lansing 13, Mich. Bids June 6. CD 5/23 and 5/31.

▲ **Louis Garavaglia**, 24240 Mound Rd., Center Line, Mich., and Sugden & Sivier, 2323 E. 8 Mile Rd., Center Line, Mich. Low Bidder, $1,388,400, est. $1,300,000, altering water, drainage and sewerage sys., relocation city lighting and power, John C. Lodge Expressway, Proj. UI 82-127, C5S (UI 404 34), DETROIT, MICH. State, Charles M. Ziergler, comr., 222 Townsend St., Lansing 13, Mich. Bids June 6. CD 5/23.

LOW BIDDERS—BUILDINGS

Stanley A. Nelson, 643 W. 79 St., Chicago 20, Ill., Low Bidder, $598,500 without subs., brick, concrete HIGH SCHOOL addn., FORT ATKINSON, WIS. School Dist. 6, Office City Hall, Fort Atkinson, Wis. Bids June 1.

CONTRACTS—HEAVY CONSTRUCTION

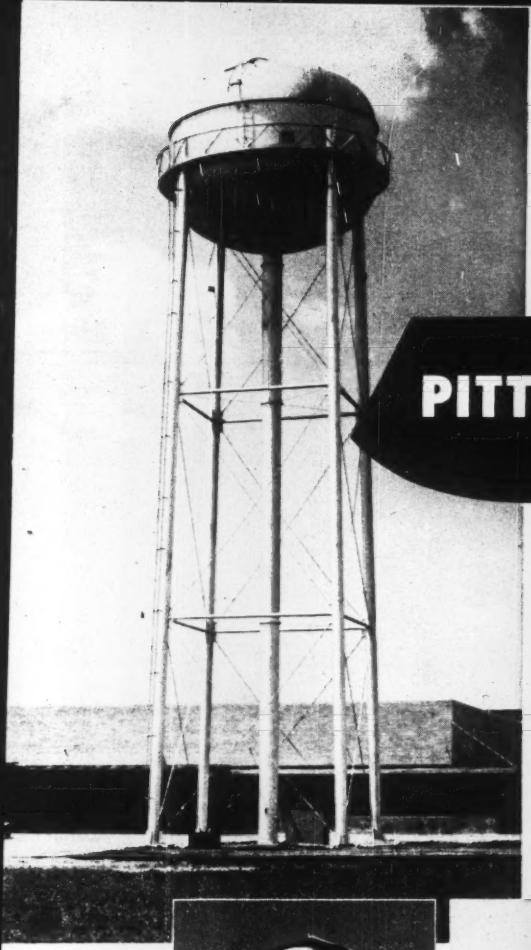
Upton Bros. Excavating Co., Maxton Rd., Vandalia, O., Contract Awarded, $140,934, est. $148,820, rebuild Burns Ave. sanitary sewers, DAYTON, O. City, City Hall, Dayton, O. Bids June 7. CD 10/23/45.

Christopher Constr. Co., 40 W. Gay St., Columbus, O., Contract Awarded, $102,724, water plant, Hubbard Rd., MADISON, O. Village, Madison, O. Awarded June 7.

▲† **A. L. Jackson Co.**, 161 E. Erie St., Chicago 11, Ill., Contract Awarded, $2,250,000, 14 dormitories and 2 mess halls, O'Hare Field, CHICAGO, ILL. U. S. Air Force Base O'Hare Field, Ill., Warren & Van Praag, 253 S. Park St., Decatur, Ill., engrs. Awarded May 29.

▲† **Jonathan Woodner Co.**, Rantoul, Ill., Contract Awarded, $5,000,000, constr. 33 barracks, 4 mess and administration bldgs., 1 government field office at Chanute Air Force Base, RANTOUL, ILL. Dst. Air Force, Pentagon Bldg., Wash., D. C. Bids May 19.

(Continued on page 103)



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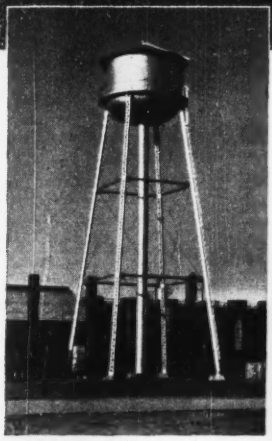

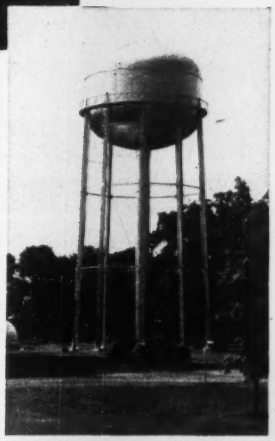

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We've taken hundreds of these pictures, showing several types of blasting—clicked off by our electric machine-gun camera at the rate of three per second. The reason behind them is to show what *really* happens when a blast goes off—so that you, our customer, can profit from better knowledge of results to be gained from different explosives, different loading and shooting methods.

This photo, for example, is one of 15 covering this blast of 22,000 pounds of Atlas explosives in a limestone quarry. It shows the ROCKMASTER Blasting System at its best. All 17 holes were detonated from the bottom, alternating ROCKMASTER electric detonators No. 1 and 2 (timed at average 17 milli-seconds apart).

Ask your Atlas representative to show you machine-gun camera photos of other types of blasting, so that you can gain from Atlas' wide experience in pioneering split-second delay blasting. Ask him, too, or write us, for the ROCKMASTER Booklet, showing typical loading diagrams for blasting rock, coal, ore . . . on the surface or underground.

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

ROCKMASTER: Reg. U.S. Pat. Off.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

(Continued from page 100)

P. W. Ryan Sons, 303 S. Third St., Janesville, Wis. Contract Awarded. $106,300, grading, draining 4.962 mi. Stoughton-U. S. H. 12 Road, C. T. Hy. "N" Proj. S 0249 (1). Contract 2, Dane Co.*****R. B. Vickery Co.**, Suamico, Wis., $155,297, grading, draining 5.566 mi. St. Augustine St., Village of Pulaski and Pulaski-Krakow Road, S. T. Hy. 32, Brown, Oconto and Shawano Counties*****I. H. Pertzsch**, Onalaska, Wis., $103,431, grading, draining, base course 1.384 mi. South Street-Taylor Rd., S. T. Hy. 95, Proj. T 053 (2), Contr. 2, Trempealeau Co.

George F. Young Constr. Co., Inc., 929 Waterford Ave., Milwaukee 15, Wis., $102,463, c. conc. 0.496 mi. Wauwatosa Ave. (North Avenue-Center St. Section), city of Wauwatosa, Proj. U 5714 (1), Contr. 1, Milwaukee Co.*****The White Constr. Co.**, 2543 W. Greves St., Milwaukee 3, Wis., $105,915, b. conc. 4.274 mi. C. T. Hy. "KK"-C. T. H. "B" Rd., S. T. Hy. 50, Proj. T 013-1 (6), Contr. 1, Kenosha Co.*****Mathy & Thornton Constr. Companies, Consolidated**, 508 Hoescher Bldg., La Crosse, Wis., $169,720, single aggregate bit. surf. 7.5 mi. Sparta-U. S. Hy. 21 Rd., S. T. Hy. 21, Proj. T 0319 (3), Contr. 1, Monroe Co., WISCONSIN. State Hy. Comm., State Office Bldg., Madison, Wis. Grand total $744,126. Bids June 5. CD 5/21.

F. Swatschenc, Route 2, Menasha, Wis. Contract Awarded. $209,000, sewage treatment plant, STANLEY, WIS. City, Stanley, Wis. Bids May 21. CD 4/25.

CONTRACTS—BUILDINGS

Frank Messer & Sons, Inc., 4612 Paddock St., Cincinnati, O. Contract Awarded. Approx. $750,000, 1 story, 60,000 sq. ft., brick, concrete, steel branch building for WAREHOUSING, OFFICES, DISPLAY, etc., Kettering Blvd. near Big Hill Rd., DAYTON, O. General Motors Corp., Frigidaire Div., 300 Taylor St., Dayton, O. CD 8/24/45.

▲ **Shirwood Builders**, Defiance, O., headed by Ralph L. Shirmeyer, Inc., 1204a E. Washington St., Fort Wayne, Ind., Contract Awarded Approx. $1,000,000, 100 HOMES on 90 acre tract south of city on S. R. 111, DEFIANCE, O. Ronald B. Baringer, Defiance, O.

Illinois Constr. Co., 5608 Blackston St., Chicago, 37, Ill. Contract Awarded. $800,000 2 story, 90,000 sq. ft. Priests TRAINING SCHOOL, ARLINGTON HEIGHTS, ILL. St. Viators Parish, Arlington Heights, Ill. Bids May 28, awarded June 1. CD 5/23.

Abell-Howe Co., 53 W. Jackson St., Chicago, 4, Ill. Contract Awarded. $700,000, WAREHOUSE, CHICAGO, ILL. Universal Sheet & Strip Steel Co., 3232 W. 31 St., Chicago, 23, Ill. Awarded June 29.

En Jay Constr. Co., 105 W. Madison St., Chicago, 3, Ill. Contract Awarded. $550,000, 55,000 sq. ft. FACTORY, 8233 S. Princeton St., CHICAGO, ILL. Owner c/o contractor. Awarded June 1.

B-W Constr. Co., 39 S. LaSalle St., Chicago 3, Ill. Contract Awarded. $450,000 2 story, part bsmnt., 60,000 sq. ft. SCHOOL, WINNETKA, ILL. Sacred Heart Parish, 905 Burr Ave., Winnetka, Ill. Bids May 23. CD 5/16.

Gebhard-Berghammer, Inc., 5420 W. State St., Milwaukee 8, Wis. Contract Awarded, $400,000, 2 story, bsmnt., 120x180 ft., concrete, steel, brick, MEMORIAL UNION BLDG., MILWAUKEE, WIS. Marquette University, 615 N. 11 St., Milwaukee 3, Wis. CD 9/6/49.

C. R. Meyer & Sons, 50 State St., Oshkosh, Wis. Contract Awarded. $300,000, 1 story, 240x320 ft. FACTORY, SHEBOYGAN, WIS. National Box & Specialty Co., 808 Wildwood Ave., Sheboygan, Wis.

▲ **Stone & Webster Engineering Co.**, 49 Federal St., Boston, Mass. Contract Awarded. $8,000,000, design and construction vinyltoluene PLANT, MIDLAND, MICH. Dow Chemical Co., Midland, Mich. Awarded June 4. CD 11/13.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

June 29, Kansas, Minnesota

STREETS AND ROADS

June 26, Iowa June 29, Kansas, Minnesota

▲ **Tex., San Antonio**—AIRPORT ADMINISTRATION—B.A. 6/26—City, City Hall, Military Plaza, administration and terminal for Municipal Airport. Approx. $1,250,000. Plans deposit $50. Bid date changed. Atlee B. & Robert M. Ayres, Transit Tower Bldg., archts. Frank T. Drought, 117 E. Pecan St., Leigh Foster Assoc., South Bend, Ind., engrs. CD 6/11.

BIDS ASKED—BUILDINGS

Tex., Amarillo—BANK—Bids Asked—Amarillo National Bank, Amarillo, 2 story, bsmnt. bank addn. $500,000. Robert E. Hucker, Johnson Bldg., archt. CD 6/7.

▲ **Tex., Goldsmith**—PLANT—Bids Asked — Phillips Chemical Co., Goldsmith, sulphur production plant, $1,750,000. CD 6/7.

SOON LETS CONTRACT—BUILDINGS

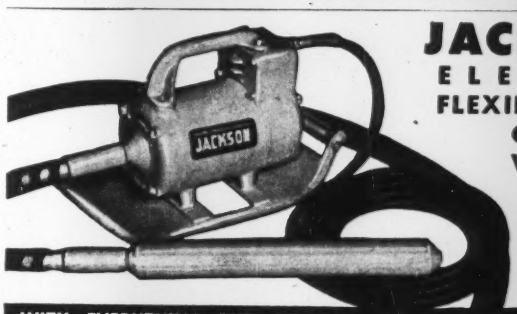
▲ **Ia., Sioux City** — Lutheran Hospital, 2714 Pierce St., soon lets contract 4 story hospital addn. with pent house roof, $1,345,700. John Latenser & Sons, 1307 Farnum St., Omaha, Neb., archts. CD 6/4.

Kan., El Dorado—HOSPITAL—Susan B. Allen Memorial Hospital, El Dorado, soon lets contract hospital addn. $680,000. Jamieson & Spearl, Arcade Bldg., St. Louis, Mo., archts. CD 4/4/50.

When you specify
BLAW-KNOX GRATING
you get . . .

Rigid One-Piece Construction, easy to install.
Maximum open area for light and air.
Easy painting—all surfaces accessible.
Non-slip tread due to twisted bar.
Self-cleaning—no sharp corners to clog.
Write for complete specifications.

BLAW-KNOX Electroforged
GRATING AND STAIR TREADS
BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY
2001 Farmers Bank Bldg., Pittsburgh 22, Pa.



JACKSON
ELECTRIC
FLEXIBLE-SHAFT
CONCRETE
VIBRATOR
MODEL
FS-
150A

WITH EVERYTHING THE GENERAL CONTRACTOR COULD WANT

POWER GALORE: 2½ HP (continuous duty rating) Universal Motor provides more than ample power for uninterrupted placing of the stiffest mixes using the maximum length of shaft.

LIGHT SOCKET OPERATION: Wherever either 115 volt, 60 cycle single phase AC or Direct Current is available, this relatively inexpensive vibrator will do a bang-up job of concrete placement.

28 FOOT REACH: Available with any length of shaft up to 28 feet. Maximum length makes hard-to-get-to places readily accessible — saves time by making frequent changes of vibrator location.

CONVENIENT — RUGGED CONSTRUCTION: Double grip, skid-base handle with finger-tip control switch. Weighs only 50 lbs. Finest, smooth-running flexible shaft and fittings — built to take the most severe usage.

GRINDING: Countershaft attachment for quick conversion to wet or dry concrete rubbing.

HIGH FREQUENCY — 3 VIBRATOR HEADS: 8,000 to 10,000 VPM and availability of three vibrator heads assure rapid as well as thorough consolidation of the stiffest mix concrete under all conditions.

See this outstanding general-purpose electric vibrator at your Jackson Distributor or write for complete facts.

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON, MICHIGAN

ATLAS SPEED SYSTEM OF CONCRETE FORM CONSTRUCTION

Cuts Down Slab and Wall Form Costs

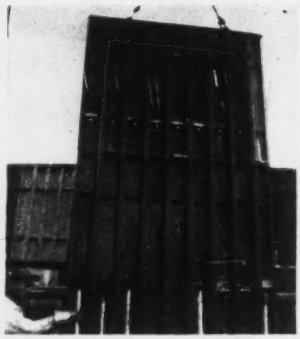
CUTS DOWN Form Costs—Steel Forms give you more uses—Many times more than wood. . . . Can be reused indefinitely, year after year on job after job. . . . Many contractors report 400, 500 and more.

CUTS DOWN Labor Costs—STEEL Speed Forms go up faster. . . . Easily assembled with wedge bolts—No special fastenings used. Lightweight yet ruggedly built.

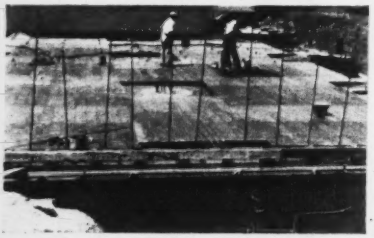
SAVES TIME—A new technique—Forms can be set up, stripped, cleaned, moved and reused in half the time of other forms.

Get the complete story. Glad to have a representative call and give you layouts, cost studies, recommendations and prices. Write Dept. *RN*.

IRVINGTON FORM & TANK CORP.
20 Vesey St. N. Y. 7, N. Y.



Interchangeable steel forms for slabs, walls, circular tanks, tunnels, manholes, modular structures.



LABOR-SAVING *SPEED* FORMS

mounted on rubber *for EXTRA MOBILITY*

HEAVY-DUTY WAYNE CRANE

½-YD. — 10-TON CRANE-EXCAVATOR

MODEL **20** WHEEL-MOUNTED

This is the self-leveling chassis that permits full operation with maximum stability, even on the roughest terrain.

The rubber-mounted Model 20 gets to the "scattered" jobs in a hurry—makes your pay-off BIGGER. Traveling fast under its own power eliminates expensive hauling charges.

And on the job, Wayne Crane moves more dirt than larger machines. Actually, that's because Wayne Crane has the fastest swing speed on the market—6½ r.p.m.

You be the judge—don't buy a rubber-mounted crane-excavator until you have compared Wayne Crane with *any* or *all* other ½-yd. machines. See for yourself that Wayne Crane offers more profit-making machinery for your money!

SEE YOUR WAYNE CRANE DISTRIBUTOR

"One WAYNE CRANE Sells Another"

Mfd. by WAYNE CRANE DIV., AMERICAN STEEL DREDGE CO. INC., Fort Wayne 1, Ind., U.S.A.

Complete service and parts facilities are maintained by Wayne Crane Distributors in all principal cities.

LOW BIDDERS—CONSTRUCTION

Northern Constr. Co., Grand Forks, N. D. Low Bidder. $350,747. soil cement, base, plant-mixed bit. surf. and Bridge 5281 Polk Co. and 1.5 mi. Marshall Co.; soil cement road-mixed bit. surf. 0.35 mi. at west end of Red Lake River Bridge, CROOKSTON, MINN. Polk Co., H. J. Welte, aud., Crookston, Minn. Bids May 29. CD 5/10.

A. Hedenberg & Co., 4621 E. Superior St., Duluth, Minn. Low Bidder. $180,160. 3 circular concrete reservoirs, DULUTH, MINN. City, C. D. Jeronimus, clk., Duluth, Minn. Bids June 5. CD 5/31.

† **L. G. Barcus & Sons**, 1430 State St., Kansas City, Kan. Low Bidder. $212,515. Rock Creek pumping plant for flood protection, North Kansas City, Inv. 120, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids June 6.

Hallett Constr. Co., Crosby, Minn. Low Bidder. $373,630. 52 mi. rural distr. lines, Nuchollis, Webster and Adams Counties, NEBRASKA. Loup River Public Power Dist., Columbus, Neb. Bids May 24. CD 5/17.

Oklahoma Turnpike Auth., Capitol, Oklahoma City 5, Okla., rejected bids May 29 grading, drainage 5.11 mi. in Depew, Lincoln Co., L.B. $527,000, est. $446,000; grading, drainage 5.2 mi. in Stroud, Lincoln Co., L.B. $515,000, est. $435,000, OKLAHOMA. CD 5/16.

City, City Hall, Oklahoma City, Okla., rejected bids June 5, asph. paving Will Rogers Airport, L. B. $293,700, est. $290,000, OKLAHOMA CITY, OKLA. Toler, Jones & Toler, 1323 N.E. 23 St., Oklahoma City, Okla., engrs.

† **Ed Johnson**, Marlin Hy., Waco, Tex. Low Bidder, $134,834. Academic Bldg., Inv. No. Eng 41-443-51-21, at Connally Air Force Base, WACO, TEX. U. S. Eng., 1127 Texas & Pacific Bldg., Forth Worth, Tex., Bids June 5.

† **Allis-Chalmers Mfg. Co.**, Continental Oil Bldg., Denver, Colo. Low Bidder, $363,794, one vertical shaft pump turbine, 370 cfs capacity at 240 ft. head and one 13,000 hp. vertical-shaft synchronous motor for Flatiron Power and Pumping Plant, Colorado-Big Thompson Proj., Spec. DS-3386, COLORADO. Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids May 24. CD 4/18.

▲ **Peter Kiewit & Sons Constr. Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb. Low Bidder, $1,287,886, est. $1,116,653, constr. Willow Creek pumping plant and Willow Creek pump-canal, about 4 mi. north of Granby, Colorado-Big Thompson Proj., Spec. DC-3394, COLORADO. Bureau Reclamation, Dpt. Interior, Grand Lake, Colo. Bids June 7. CD 4/26.

LOW BIDDERS—BUILDINGS

A. Hedenberg & Co., 4621 E. Superior St., Duluth, Minn. Low Bidder. $857,800. 2 story, 189x269 ft. PHYSICAL EDUCATION BLDG., for Duluth Branch, DULUTH, MINN. Regents of University of Minnesota, R. S. Callaway, purch. agt., 323 Adm. Bldg., Minneapolis, Minn. Bids June 1. CD 5/9.

† **Alport-Carlo Constr. Co.**, 1118 Title Guaranty Bldg., St. Louis 1, Mo. Low Bidder. $386,400. modernization, alterations, brick, rein.-con. chart PLANT, ST. LOUIS, MO. U. S. Aeronautical Chart Service, Contracting Officer, Aeronautical Chart Plant, Second and Arsenal Sts., St. Louis, Mo. Bids June 6.

▲ **Olathe Builders, Inc.**, c/o Jack H. Sharp, Midwest Builders Supply, Inc., 2462 Grand Ave., Kansas City 8, Mo. Low Bidder. $2,145,036. construct, manage and finance 55 DWELLING bldgs., GARAGES, streets, sewers, water lines and grading site, OLATHE, KAN. Ninth Naval Dist., Great Lakes, Ill. Bids June 7.

Kelly D. DeBusk, 2607 Westover St., Austin, Tex. Low Bidder, $520,960, 66 DWELLING units for total 33 dwellings, slab on fill, brick, hollow tile walls constr., Tex. 4-J, LULING, TEX. Luling Housing Auth., Luling, Tex. Bids June 5. CD 5/11.

Kirchhof Constr. Co., 700 Lawrence St., Denver, Colo., Low Bidder, $736,162, est. over $300,000, 4 story 50,000 sq. ft. PETROLEUM BLDG. for Colorado School of Mines, GOLDEN, COLO. Colorado School of Mines, Golden, Colo. Fuller, Fuller & Fuller, Insurance Bldg., Denver, Colo., engrs.

CONTRACTS—HEAVY CONSTRUCTION

Nelson & Peterson, 1902 W. Michigan St., Duluth, Minn. Contract Awarded, $168,778. concrete paving, CHISHOLM, MINN. City, M. A. Norberg, clk., Chisholm, Minn. Bids May 16. CD 5/2.

Broce & Smith, Contractors, Inc., Larned, Kan. Contract Awarded, $59,966. sheet asph. surf. 1.369 mi. Proj. 83-88 K 6123 (1) Seward Co.; $239,060, base, single asph. surf. tr. 10.779 mi. Proj. 50N-42 F 062-1 (1). Hodgeman Co.; Southwest Sand & Gravel Co., Great Bend, Kan., $226,428, base, single asph. surf. tr. light type surf. (detour) 11.117 mi. Proj. 283-42 F 428 (11). Part II Hodgeman Co., KANSAS. State Hy. Dist., Dodge City, Kan. Grand total $525,454 Bids May 25. CD 5/11.

▲† **Peter Kiewit Sons' Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb. Contract Awarded, $2,212,509, est. $2,078,237, construct 92.3 mi. Angostura Canal, Station 10 plus 89 to 1611 plus 50, wasteways, laterals sublaterals and surface drains, Spec. 3372, Missouri River Basin Proj., SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Hot Springs, S. D. Bids May 8. CD 5/22. under LB.

G & I Constr. Co., Meeker, Okla. Contract Awarded, $129,885, est. $129,922. asph. stabil. base bit. surf. 7.929 mi. U.S. 60, Ellis Co.; $84,975, est. $85,021. asph. stabil. base bit. surf. 6.291 mi. U.S. 60 east of Arnett, Dewey Co.; $86,446, est. $81,908. asph. stabil base bit. paving 5.033 mi. State Hy. 41 from the Texas line to Sweetwater, Beckham Co.***

(Continued on page 106)

These Advantages Establish Paving Records!

THREE sizes to choose from for your particular problem—from the 27-E (ideal for general construction work with the HighLift Boom) to the 34-E DuoMix for the heavy road job.

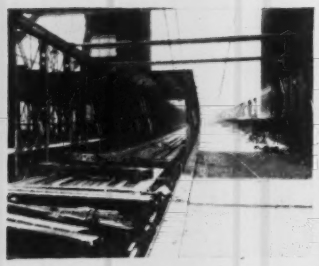
- Greater simplicity of design—only one main shaft, everything in units and easily get-at-able—you don't have to be a mountain goat to take care of a MultiFoote.
- All high-speed shafts on anti-friction bearings sealed against dirt.
- More engine power.
- A simple, direct, fast skip hoist—less cable wear, easy to reeve.
- Skip "A" Frame easily lowered by power, reduces skip hoist power required, reduces cable tension, lengthens skip hoist cable life and reduces wear on skip shaft bearings.
- Double Cone Drum does not build up in the corners, reduces time required for cleaning.
- Helical Gear Drive built as a separate unit. The finest speed reducer on any paver.
- Crawlers with real self-cleaning action, no pockets to fill, no U bolts or overhanging axles to give trouble.
- *Mechanical* control for either manual or automatic cycle—positive in action and free from delicate mechanisms. Your paver can't be shut down because of control failure.
- The HighLift Boom—an asset that puts concrete 23 feet up (higher with special booms) allows you to pour wall without ramps, false work or hoisting equipment. Can be raised or lowered without rereeving cable.
- Other advantages that mean low cost operation and higher output.

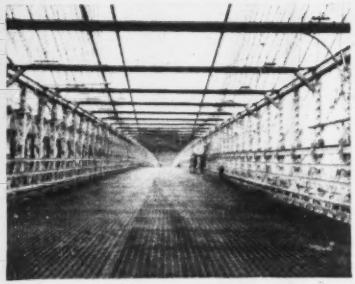
Williams Paving Co., of Norfolk, Va., establishing a record of a mile of 9 in. 12 ft. lane in 13 hours on the eastern extension of the Turnpike.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1922 State Street Nunda, New York

MULTIFOOTE PAVER

FOR EVERY PLACE CONCRETE MUST BE POURED





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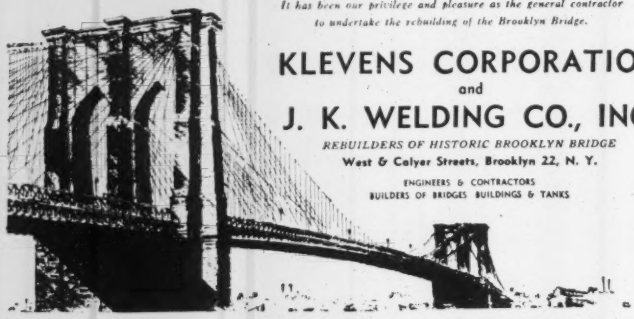
. . . Reconstruction of the BROOKLYN BRIDGE

It has been our privilege and pleasure as the general contractor to undertake the rebuilding of the Brooklyn Bridge.



KLEVENS CORPORATION
and
J. K. WELDING CO., INC.

REBUILDERS OF HISTORIC BROOKLYN BRIDGE
West & Colyer Streets, Brooklyn 22, N. Y.

ENGINEERS & CONTRACTORS
BUILDERS OF BRIDGES BUILDINGS & TANKS

CRESCENT POWER SCRAPERS

Above picture shows a 15 cu. yd. Sauerman Crescent Scraper, operating between two mobile towers and building a Mississippi River levee with material taken from a borrow pit 500 ft. wide. This bucket dug and placed an average of 185,000 cu. yd. a month.

Handle More Yardage For Your Dollar

ON thousands of dig-and-haul jobs, Sauerman Crescent scraper buckets have proved their ability to move large daily yardage of gravel, clay, stone, etc., at costs of a few cents per cubic yard.

This efficiency is due to the streamline design of this unique bucket. A Crescent scraper penetrates hard materials with the ease of a plowshare, and both in digging and conveying it requires less line-pull than other scrapers, size for size.

For complete data on the various sizes of Crescent scrapers, handling capacities, methods of operation, etc., write for Catalog 19-J.

SAUERMAN BROS., INC.

532 S. CLINTON ST. CHICAGO 7, ILL.

(Continued from page 104)

Park-Wood Co., 711 N.W. 38 St., Oklahoma City 6, Okla., $87,999, est. $114,056, stabil. aggregate base, rock asph. surf. 3.454 mi. State Hy. 18 north of U.S. 70, Custer Co.***Honneger Bros., Kingfisher, Okla., $72,770, est. $78,494, grading, drainage 5.047 mi. State Hy. 41 from Texas line to Sweetwater, Beckham Co.***Ryan-Richards Co., 1401 N.W. 5 St., Oklahoma City 6, Okla., $158,950, est. $160,-267, asph. stabil. base, bit. surf. 7.822 mi. State Hy. 33 east of Butler, Custer Co.

Austin Constr. Co., 1813 Clarence St., Dallas, Tex., $102,050, est. $100,893, asph. stabil. base, bit. surf. 5.971 mi. State Hy. 58, Caddo Co.; $118,738, est. $119,343, asph. stabil. base, bit. surf. 6.183 mi. State Hy. 58 at Lookeba, Caddo Co.; $100,513, est. $101,856, asph. stabil. base, bit. surf. 4.814 mi. State Hy. 53 north of Hinton, Caddo Co.*** Oklahoma Constr. Co., Southern Surety Bldg., Muskogee, Okla., $91,938, est. $97,900, grading, drainage, 2 bridges 6.485 mi. State Hy. 199, Marshall Co.; $159,909, est. $154,000, stabil. aggregate base, bit. surf. 4.343 mi. State Hy. 199 north of Kingston, Bryan Co. OKLAHOMA, State Hy. Dpt., Oklahoma City 5, Okla. Grand total $1,195,173. Bids June 5, awarded June 6.

Ryan-Richards Co., 1405 N.W. 5 St., Oklahoma City 6, Okla. Contract Awarded. $420,210, est. $424,640, asph. pavement Byers Ave., Contr. 4; Metropolitan Paving Co., 300 S. Indiana Ave., Oklahoma City 4, Okla., $72,024, est. $77,119, asph. pavement Dist. 1142, OKLAHOMA CITY, OKLA., City Hall, Oklahoma City, Okla.; H. E. Chase, Oklahoma City, Okla., city engr. Awarded June 5.

Guy H. James, First Natl. Bldg., Oklahoma City, Okla. Contract Awarded. $118,000, est. $140,000, clearing Upper Spavinaw Reservoir, at Jay, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids June 1, awarded June 4. CD 5/18.

Layman & Co., 3001 Riverside Dr., Tulsa, Okla. Contract Awarded. $121,677, est. $122,023, asph. paving Dist. 1305, TULSA, OKLA. City, City Hall, Tulsa, Okla.; W. R. Wooten, city engr. Awarded May 18. CD 11/29/45.

Preston Square Shopping Center, Preston Rd. and Northwest Hy., Dallas, Tex., Day Labor, $115,000, asph. type paving in Shopping Center zone, DALLAS, TEX. CD 5/18.

Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, Tex. Force Account. Approx. $100,000, telephone line relocation due to Garza-Little Elm Dam, LEWISVILLE, TEX. CD 6/8.

City, City Hall, Military Plaza, San Antonio, Tex. Force Account, $100,000, general rehabilitation various paved and unpaved streets, SAN ANTONIO, TEX. Tom Cahill, city engr. CD 8/12/49.

▲ Sletten Constr. Co., 1301 10 Ave. N., Great Falls, Mont., and Pappin Constr. Co., 7 Ave. S. and 2 St., Great Falls, Mont. Contract Awarded. $1,295,831, est. $2,884,336, 7 frame barracks, rein.-con. mess facilities bldg., utilities, Great Falls Air Force Base, Eng. 51-2, GREAT FALLS, MONT. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. CD 5/22, under LB.

† R. H. Dutcher & Sons, 1007 E. Lincolnway, Cheyenne, Wyo. Contract Awarded. $497,835, 3 school bldgs. at Warren Air Force Base, Inc. 59, CHEYENNE, WYO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 31. CD 5/17.

▲ Macco Corp. and Puget Sound Drilling & Dredging, 14409 Paramount Blvd., Paramount, Calif. Contract Awarded. $7,018,966, Reservoir Number 22 Dam, DENVER, COLO. Bd. Water Comrs., City and County Bldg., Denver, Colo. Bids May 17. CD 5/21, under LB.

Great Lakes Oil & Chemical Co., Farmington, N. M. Purchase and Hire. Approx. $175,000, natural gas gathering lines, San Juan Co., NEW MEXICO. CD 5/18.

CONTRACTS—BUILDINGS

▲ W. C. Smith, Inc., 413 Bradley Bldg., Duluth, Minn. Contract Awarded. $1,858,242, general constr. 200 DWELLING units, admin. bldg., Harbor View Homes Proj., incl. grading, paving, utilities, DULUTH, MINN. Duluth Housing & Redevelopment Auth., 201 City Hall. C. C. Liscomb, chn., Duluth, Minn. CD 5/9, under LB.

Kraus-Anderson, Inc., 501 S. 8 St., Minneapolis, Minn. Contract Awarded. $547,350, general constr. elementary SCHOOL, Lafayette Elementary SCHOOL, WILLMAR, MINN. Bd. Educ., Alice C. Hedin, clk., Wilmar, Minn. CD 5/16, under LB.

Volo Voerster Co., Inc., 5529 Wyoming St., St. Louis 9, Mo. Owner Builds. $800,000, one hundred and two 1 story, brick concrete HOUSES, Gardenville Hills subdivision on 20¼ acre tract, MacKenzie and Weber RDs., AFFTON (ST. LOUIS 23, P. O., MO.)

Texarkana Constr. Co., P. & M. Bldg., Texarkana, Tex. Contract Awarded. $503,500, Ark. 15-1, 80 housing units, TEXARKANA, ARK. Housing Auth. of Texarkana, Texarkana, Ark. Bids June 6, awarded June 9. CD 5/9.

Quaker Valley Constr., Pittsburg, Kan. Contract Awarded. $500,000, sintering PLANT for new light weight block aggregate, Hy. 32, 1 mi. west, KANSAS CITY, KAN. Mineral Products Co., Pittsburg, Kan.

† Walden, Fulton & Payne, 114 N. College Ave., Lubbock, Tex. Contract Awarded. $758,916, CHANGE HOUSE, FIRE STATION and addnl. AUXILIARY BLDGS. in Pantex Plant area, Inv. No. 291-51-89, AMARILLO, TEX. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids May 15, awarded 6/6. CD 5/23, under LB.

Yarbrough Constr. Co., Box 851, Austin, Tex. Contract Awarded, $514,482. 60 HOUSING units, appurte-

nances, TEX 1-6, AUSTIN, TEX. Austin Housing Auth., 302 Chalmers St., Austin, Tex. Bids May 29, awarded June 6. CD 6/6, under LB.

J. S. Norman Building Corp., 4815 Richmond Rd., Houston, Tex. Owner Builds. Approx. $450,000. 50 DWELLINGS, HOUSTON, TEX. CD 6/4.

M. F. Satterwhite & Assocs., 4151 Lenark Lane, Houston, Tex. Owner Builds. $850,000, 22 high-class DWELLINGS, HOUSTON, TEX. CD 5/24.

▲ **Tellepsen Constr. Co.**, 1710 Telephone Rd. Houston, Tex. Contract Awarded. Approx. $1,000,000. CHEMICAL PLANT and remodeling existing PLANT, HOUSTON, TEX. Southern Alkali Corp., Rusk Bldg., Houston, Tex. CD 6/12.

▲ **Pan-American Refining Co.**, Texas City, Tex., Owner Builds. $1,500,000, benzine production REFINERY UNIT, TEXAS CITY, TEX. CD 6/1.

▲† **Robert E. McKee**, General Contractor, Inc., Box 1706, Santa Fe, N. M. Contract Awarded. $1,123,200. BUILDINGS facilities, Inv. No. 291-51-78, LOS ALAMOS, N. M. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids Mar. 28, awarded June 2. CD 4/6, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 5, California

† **Calif., Miramar**—RUNWAY—B.A. 6/29—Dpt. Navy, Eleventh Dist., San Diego. Runway 6R-24G, taxiways, parking areas, Spec. 29062. Approx. $60,000. Plans deposit $60. CD 1/8.

Calif., San Gabriel—SCHOOL—B.A. 6/29—San Gabriel School Dist., 3011 S. San Gabriel Blvd., 1 story, steel frame, stucco Roses Road School, $422,220. Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, Calif., archts. CD 10/5/50.

SOON LETS CONTRACTS—BUILDINGS

Calif., Belmont—COLLEGE—Sisters of Notre Dame, 300 Fulton St., Redwood City, soon lets contract college for girls, $800,000. Vincent Raney, 233 Post St., San Francisco, archt. CD 3/28.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **J. K. Thayn Constr. Co.**, 2670 Berkeley Circle, Salt Lake City, Utah, Low Bidder, $1,051,000, est. $991,865, rehabilitation railroad trackage at Deseret Chemical Warfare Depot, near TOOELE, UTAH. U. S. Eng., 74 New Montgomery St., San Francisco, Calif. Bids May 24.

▲† **Basich Bros. Constr. Co.**, 3850 S. San Gabriel Blvd., San Gabriel, Calif. Low Bidder, $1,701,598, est. $1,500,000, airfield expansion at Nellis Air Force Base, Eng. 04-353-51-79, LAS VEGAS, NEV. U. S. ENG., 751 Figueroa St., Los Angeles, Calif. Bids June 1.

† **Manson Constr. & Eng. Co.**, 821 Alaskan Way, Seattle, Wash. Low Bidder, $712,436, rehabilitating facilities at Naval Industrial Reserve Shipyard, Specs. 28412 EVERETT, WASH. P. Wks. Officer, 135th Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids 6/8. CD 5/25.

† **Leeds & Northrup Co.**, 4901 Stenton Ave., Phila., Pa., Low Bidder, $190,000 fishway control equipment for McNary Dam power house, Inv. No. 51-52, Schedule A, OREGON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids June 7. CD 4/18.

▲ **City**, City Hall, Medford, Ore., rejected bids May 24, Willow Creek Dam, MEDFORD, ORE. L. B. $1,393,008. Will re-advertise. CD 5/31, under LB.

Chas. MacClosky Co., 112 Market St., San Francisco, Calif. Low Bidder, $989,677, wid'n. steel truss bridge across San Luis Rey River, plant mix surf. approaches to entrance of Camp Pendleton, San Diego Co., CALIFORNIA State Div. Hys., P. Wks. Bldg., Sacramento, Calif. Bids June 1. CD 5/8.

† **A. B. Lahti**, 21 Arlington Court, Berkeley, Calif., Low Bidder, $194,768, duplex dwelling units to single family quarters, U. S. Naval Air Station, Spec. 29619, ALAMEDA, CALIF. Twelfth Naval Dist., Federal Office Bldg., San Francisco, Calif. Bids June 5.

† **D. W. Miller**, 14110 Aetna St., Los Angeles, Calif., and Chas. H. Fravel, 1446 14 St., Santa Monica, Calif., Low Bidders, $232,296, steam line replacement, Spec. 28851, INYOKERN, CALIF. U. S. Naval Ordnance Test Station, Inyokern, Calif. Bids June 7. CD 5/28.

▲† **Guy F. Atkinson Co.**, 10 W. Orange Ave., South San Francisco, Calif., Low Bidder, $2,044,200, addns. to aircraft loading and parking areas, Spec. 29135, MOFFETT FIELD, CALIF. Twelfth Naval Dist., Federal Office Bldg., San Francisco, Calif. Bids June 5. CD 5/18.

† **Gordon Fields**, 3383 Broadmoor St., San Bernardino, Calif., Low Bidder, $630,536, warehouse, shop and instrument and assembly bldg. at Edwards Air Force Base, ENG 04-353-51-83, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 8.

LOW BIDDERS—BUILDINGS

▲† **Moore & Roberts**, 693 Mission St., and **B & R Constr. Co.**, 110 Market St., both San Francisco, Calif., Low Bidders, $1,360,610, 8 bldgs. in Area "E" embracing post exchange, service station, enlisted men's club, school, hospital, nurses' quarters and attendants' dormitory, Dugway Proving Grounds, TOOELE, UTAH. U. S. Eng., 10 W. 1 South St., Salt Lake City, Utah. Bids May 29. CD 4/19, under LB.

▲ **Fred A. Rumph & Assoc.**, Long Beach Calif., Low Bidder, $3,576,200, $4,002,000, construct, finance, manage, 400 HOUSING units and facilities in Area "E" Dugway Proving Grounds, TOOELE, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids May 29. CD 4/24.

Waale-Camplan Co., 4860 Valley Blvd., Los Angeles, Calif. Low Bidder, $640,770, 1 story, frame, stucco Primary SCHOOL 2, BELLFLOWER, CALIF. Bellflower School Dist., 6145 N. Clark Ave., Bellflower, Calif. Bids June 6. CD 5/22.

Zaballos Bros., 850 Soto St., Hayward, Calif., Low Bidder, $347,653, Bowman SCHOOL, near HAYWARD, CALIF. La Vista Elementary School Dist., 30478 Niles Rd., Hayward, Calif. Bids May 29. CD 5/21.

Cory & Longworth, 1975 Fifth Ave., San Diego, Calif. Low Bidder, $356,073, 43 portable classroom units frame constr., SAN DIEGO, CALIF. San Diego Unified School Dist., 825 Union St., San Diego, Calif. Bids June 5. CD 5/18.

Nielsen & Nielsen, 1185 Coolidge Ave., San Jose, Calif. Low Bidder, $698,829, MUSIC BLDG., San Jose State College, SAN JOSE, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids June 5.

Maino Constr. Co., 2239 S. Broad St., San Luis Obispo, Calif. Low Bidder, $597,900, 4 rein-con. DORMITORIES at State Polytechnic College, SAN LUIS OBISPO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids June 5. CD 5/17.

▲ **Nomellini Constr. Co.**, 939 Marengo Rd., Stockton, Calif. Low Bidder, $1,937,885, general contract*** **Havery Co.**, P. O. Box 309, Fresno, Calif., $644,000 combination mechanical and plumbing; $329,000 plumbing only***Frank Hudson, Inc., Fresno, $380,576, heating, ventilating and refrigeration, RECEIVING and TREATMENT UNIT, Stockton State Hospital, STOCKTON, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids June 5. CD 5/1.

CONTRACTS—HEAVY CONSTRUCTION

† **J. H. Wise & Sons**, 222 Broadway Ave., **J. A. Terteling & Sons, Inc.**, 4011 Fairview Ave., Boise, Idaho. Contract Awarded, $668,608, rehabilitate 229 bldgs. at Mountain Home Air Force Base, MOUNTAIN HOME, IDAHO. U. S. Eng., Bldg. 602 City-County Airport, Walla Walla, Wash.

▲† **Basich Bros. Constr. Co.**, 3850 S. San Gabriel Blvd., San Gabriel, Calif. Contract Awarded, $1,701,598, est. $1,500,000, airfield expansion at Nellis Air Force Base, ENG. 04-353-51-79, LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 1. CD 6/7, under LB.

Pacific Constr. Co., 3002 16 Ave. S., Seattle, Wash. Contract Awarded, $101,768, est. $103,937, paving alleys in Blocks 26-29, Woodlawn Addn. to Green Lake et al., SEATTLE, WASH. City, County-City Bldg., Seattle 4, Wash. Bids June 6. CD 5/29.

▲† **S. Birch & Co.**, and **McLaughlin & Co.**, Ford Bldg., Great Falls, Mont. Contract Awarded, $2,051,323, est. $3,026,705, 10,000 ft. runway, 200 ft. wide, at Fairchield Air Force Base, ENG. 45-164-51-6, SPOKANE, WASH. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids May 29. CD 6/5, under LB.

▲† **R. L. Blair & Co.**, 1200 Ide Ave., Spokane, Wash. Contract Awarded, $1,171,694, est. $1,357,737, barracks, mess hall and connecting tunnels at Fairchild Air Force Base, No. 51-4, SPOKANE, WASH. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids May 16. CD 5/22, under LB.

† **D. W. Barr Constr. Co.**, 8824 John Dower Rd. S.W., Tacoma, Wash. Contract Awarded, $278,150, reconditioning pontoons and pontoon camels at Naval Station, Specs. 2635, TACOMA, WASH. P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash.

▲ **Westinghouse Electric Corp.**, Union Bank Bldg., Pittsburgh, Pa. Contract Awarded, $1,195,319, four 50,000-kva TRANSFORMERS, TACOMA, WASH. City, City Hall, Tacoma, Wash. CD 4/10, under LB.

† **Haddock Engineers Ltd.**, 1616 S. Greenwood Ave., Montebello, Calif. Contract Awarded, $791,370, aviation fuel storage, Naval Air Station, North Island, NOY 26893, Spec. 28922, MIRAMAR, CALIF. Dpt. Navy, Eleventh Dist., San Diego, Calif. Bids May 24, awarded June 6. CD 5/29, under LB.

CONTRACTS—BUILDINGS

▲ **Humiston-Rosendale, Inc.**, 11941 Wilshire Blvd., West Los Angeles, Calif. Contract Awarded total est. $1,000,000, PUMPING STATIONS in Juniper, Idaho; and Baker, Ore.; **Chicago Bridge & Iron Co.**, White-Henry-Stuart Bldg., Seattle 1, Wash., 118,000 bbl. storage tanks at Pasco, Wash., IDAHO, OREGON AND WASHINGTON, Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.

▲ **M. H. Golden Constr. Co.**, 3485 Noell St., San Diego, Calif. Contract Awarded, $1,468,950, est. $1,000,000, 2 and 3 story rein.-con. ADMINISTRATION BLDG., SAN DIEGO, CALIF. San Diego Unified School Dist., 835 Union St., San Diego, Calif. Bids May 29, awarded June 6. CD 6/6, under LB.

▲ **Moss Constr. Co.**, 227 S. Robertson Ave., Beverly Hills, Calif. Owner Builds, $2,250,000, 219 frame-stucco DWELLINGS, Tract 16401, TORRANCE, CALIF.

▲ **Thorson Homes, Inc.**, 3846 Wilshire Blvd., Los Angeles, Calif. Owner Builds, $3,840,400, 535 stucco DWELLINGS, 223 St., 222 St., 228 St., and Caskill Ave., WILMINGTON, CALIF.

ALASKA

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Vaile-Sommers Constr. Co.**, 407 3 Ave., W., Seattle, Wash. Low Bidder, $8,406,021, est. $10,133,516, three 500-man airmen's dormitories, Inv. No. 51-59, Elmendorf Air Force Base, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids June 7. CD 5/16.

▲† **Kuney Johnson Co.**, 235 9 Ave., N., Seattle, Wash. Low Bidder, $10,213,871, est. $10,486,092, 3 airmens dormitory bldgs., Inv. No. 51-60, Ladd Air Force Base, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska.

▲† **Scheuman & Johnson et al**, Lloyd Bldg., Seattle 1, Wash. Low Bidder, $1,690,000, est. $2,561,759, port facilities, bulkhead wharf, Inv. No. 51-109, HAINES, ALASKA. U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids June 8.

CONTRACTS—HEAVY CONSTRUCTION

▲† **M-B Contg. Co.**, Anchorage, Alaska. Contract Awarded, $1,785,840, est. $2,096,943, 200x800 ft. station warehouse and 3,000 ft. spur trackage, Inv. No. 52-44, Elmendorf Air Force Base, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids May 18. CD 5/23, under LB.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

† **Virgin Islands, St. John**—B.A. 7/27—Dist. Eng. Dpt. Interior, Post Office Box 479, St. Thomas. Project 53.104, potable water facilities, adv. ENR 6/14.

BIDS ASKED—BUILDINGS

▲ **Puerto Rico, Ponce**—HOSPITAL—B.A. 9/14—Jorge J. Jimenez, Comr. of The Interior of Puerto Rico, Bd. of Awards, Dpt. of Interior, Santurce, construct general district hospital bldg., Ponce Hospital Center, Proj. PR-3, $3,000,000. Plans deposit $250. Burdette Rosenfield, 23 W. 47 St., New York 19, N. Y., archt.

CANADA

LOW BIDDERS—BUILDINGS

▲ **Winnipeg Supply & Fuel Co., Ltd.**, Boyd Bldg., Winnipeg, Man. Contract Awarded. Approx. $2,500,000, 9 bldgs. at Royal Canadian Air Force Station, at Stevenson Airfield, barrack blocks, WINNIPEG, MAN. Defense Constr. Ltd., Kensington Bldg., Winnipeg, Man. Awarded May 30. CD 4/19.

CONTRACTS—HEAVY CONSTRUCTION

Sundre Contg. Co., Sundre, Alta. Contract Awarded, $228,490, grading 10 mi., Ponoka east to Dorenlee ***Park Brothers Ltd.**, Spirit River, Alta., $213,407 grading 10 mi. Rycroft and Blueberry Corner*** **Western Constr. & Lumber Co. Ltd.**, 10460 111 St., Edmonton, Alta., $415,587, cut-off highway from Whitecourt to 20 mi. northwest of that community, ALBERTA. Province of Alberta, Parliament Bldgs., Edmonton, Alta. Grand total $857,484. Awarded May 31. CD 12/3/43.

▲ **City**, 6th Floor Civic Block, Edmonton, Alta., Own Forces, $1,103,360, local street and road imprvs., incl. grading, graveling, concrete walks and curbs, EDMONTON, ALTA. J. D. A. MacDonald, city engr.

MacEachern & Lucas, Swan River, Man. Contract Awarded, $138,862, grading 13 2/3 mi. from Lorette to Ste. Anne; **G. Peterson**, 259 Ste. Anne Rd., Winnipeg, Man., $125,500, grading 11½ mi. from east limit of St. Boniface to Lorette, MANITOBA. Province of Manitoba, Winnipeg, Man. CD 6/4.

▲ **A. W. Robertson Ltd.**, 57 Bloor St. W., Toronto, Ont. Contract Awarded. Approx. $1,600,000, six O.R. quarters at R.C.A.F. Station, CAMP BORDEN, Ont. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. S. M. Connolly, c/o owner, engr.

La Societe d'Entreprises Generales Ltd., Third Ave. E., Amos, Que. Contract Awarded. Approx. $500,000, asphaltic surfaced runway, VAL D'OR, QUE. Dpt. Transport, Ottawa, Ont. Bids May 16. CD 5/7.

CONTRACTS—BUILDING

▲ **Cromar Constr. Ltd.**, 448 Colborne St., Brantford, Ont. Contract Awarded. Approx. $2,000,000, 1 story, rein.-con., structural steel, PLANT, LONDON, ONT. Canadian Minnesota Mining & Manufacturing Co., Northern Life Bldg., London, Ont. CD 5/14.

The Thomas Fuller Constr. Co. Ltd., 33 Main Ave., Ottawa, Ont. Contract Awarded. Approx. $899,700, extensive changes, alterations to central HEATING PLANT, Cliff St., OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids June 6. CD 5/15.

▲ **The Robertson Constr. & Eng. Co., Ltd.**, Niagara Falls, Ont. Contract Awarded. Approx. $1,106,000, radio and electric, ENGINEERING LABORATORY, Montreal Rd., OTTAWA, ONT. National Research Council, Sussex St., Ottawa, Ont. Bids June 6. CD 5/28.

▲ **Milne & Nicholls Ltd.**, 57 Bloor St. W., Toronto, Ont. Contract Awarded. $2,000,000, RESIDENCE for women, 82 Queen's Park, TORONTO, ONT. Victoria University, Queens' Park Crescent, Toronto, Ont. Fleury & Arthur, 85 Bedford Rd., Toronto, Ont., archts. CD 3/24/47.

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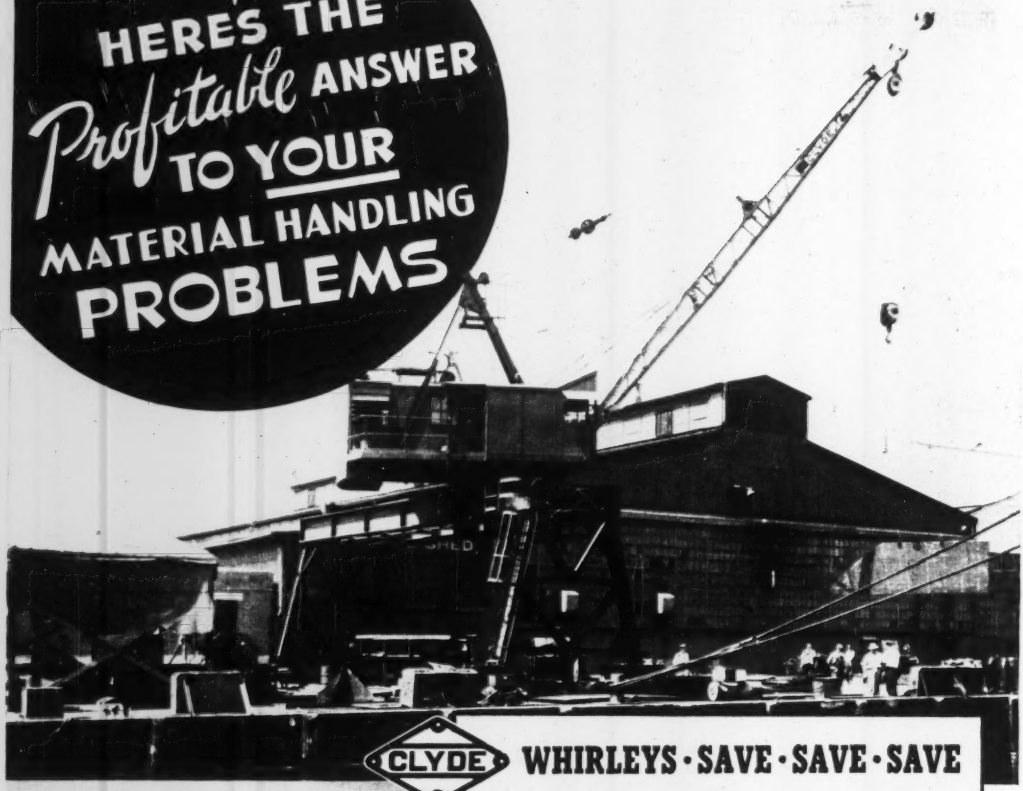

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CONSTRUCTION REPORTS- Third Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

Me., Orono — UNION MEMORIAL — Bids Asked — Bd. Trustees, University of Maine, Orono. Union Memorial Bldg.; $900,000. N.P.A. granted authorization. CD 2/2/50.

MIDDLE ATLANTIC

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Bureau Contracts & Accounts,** Albany, N. Y., rejected bids Apr. 11, 12.35 mi. Taconic State Parkway, Columbia and Dutchess Counties, NEW YORK. L. B. $3,297,640. CD 4/13, under LB.

▲ **Franklin Contg. Co.,** 12 Central Ave., Newark, N. J. Low Bidder. $1,973,454, constr. 2.233 mi. Route 6 (Sect. 23B) from Pine Brook relocation to Little Falls Road, Caldwell Twp., Essex Co., NEW JERSEY. State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J. Bids June 12.

LOW BIDDERS—BUILDINGS

▲ **Wilaka Constr. Co.,** 11 E. 44 St., New York, N. Y., Low Bidder. $2,747,000 foundations and general constr. ***Abco Plumbing & Heating Co.,** 453 W. 54 St., N. Y., $336,000, heating and ventilating***Jarco Bros. Inc.,** 306 E. 45 St., New York, 17, N. Y., $350,000, plumbing for Redfern Houses, Proj. No. NYS-55, Sect. I, incl. Bldgs. 1 to 5 (inclusive) in area bounded by Nassau Co. line, Jeannette and Debney Aves., Leland St., a line west of Redfern Ave. between Leland and Hassock Sts., Hassock St. and Beach Channel Dr., Queens Boro, FAR ROCKAWAY, N. Y. New York City Housing Auth., 63 Park Row, New York, 7, N. Y. Bids June 5. CD 5/25.

▲ **Cottage Constr. Co.,** 311 Kinderkamack Rd., River Edge, N. J. (second low bidder). $7,651,912, construct, manage, finance 1,000 unit private rental HOUSING, Proj. N-06, Sec. 1, 2, 3 and 4 at U. S. Naval Air Station and U. S. Naval Air Test Center, PATUXENT RIVER, MD. Dist. Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Low bidder failed to submit his application to FHA in allotted time. CD 5/9, under LB.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Horn Constr. Co., Inc.,** 2174 Hewlett Ave., Merrick, N. Y., Contract Awarded, $1,123,096, 2.24 mi. Palisades Interstate Parkway and 1.93 mi. access road, Rockland Co.; **Gull Contg. Co.** and **Tully & DiNapoli, Inc.,** 33-15 Lawrence St., Flushing, N.Y., $2,387,834, grading, paving 0.48 mi. Van Wyck Expressway, Queens Co., NEW YORK. Bureau Contracts & Accounts, Albany, N. Y. Bids Apr. 11. CE 4/13, under LB.

▲† **Dick Constr. Co.,** 2532 Library St., Pittsburgh, Pa. Contract Awarded. $1,445,935, mess hall and barracks, Greater Pittsburgh Air Force Base, Moon Twp. PITTSBURGH, PA. Dist. Army, 121 N. Broad St., Phila., Pa. Gannett, Fleming, Corddry & Carpenter, 600 N. 2 St., Harrisburg, Pa., engrs.

CONTRACTS—BUILDINGS

▲ **H.R.H. Constr. Co.,** 16 W. 46 St., New York, N. Y. Contract Awarded. $2,778,000 foundation and general constr., Sect. II incl. Buildings Numbers 3, 5, 6 and 7 of St. Nicholas HOUSES (Proj. No. NY-510) in area bounded generally by W. 128 St., 7 Ave., W. 127 St., and 9 Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York, 38, N. Y. Bids May 8. CD 5/11, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Fla., Pensacola**—TRAINING FIELD—B. A. 6/28—Dpt. Navy, c/o Officer in Charge of Construction, Naval Air Station, Pensacola, Fla. jet training field, $4,000,000. Bid date changed. Palmer & Baker, Staples Bldg., Mobile, Ala., engrs. CD 6/6.

BIDS ASKED—BUILDINGS

▲ **Ala., Athens**—HOUSING—B. A. 6/27—Athens Housing Auth., Athens Projects Ala. 67-1 and Ala. 67-2, 100 housing units $1,000,000. Bid date changed. CD 4/20.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Nello L. Teer Co.,** Durham, N. C., Low Bidder. $2,749,000, exten. runways for jet operations, CHERRY POINT, N. C. Dpt. Navy, Officer in Charge of Construction, P. O. Box 365, Naval Base, Charleston, S. C. Bids June 12. CD 5/23.

▲ **The Duval Engineering & Contr. Co.,** P. O. Box 1588, Jacksonville, Fla., Low Bidder, $4,982,152, grading, paving one concrete and three underpass structures, Rds. 10 and 115, Job 7204-178; $75,108, grading, paving Parks Road and access ramp on Little Talbot Island and access ramp on Sawpit Point, Jobs. 7225-109 and 7226-102, both Duval Co.***Georgia-Alabama Paving Co.** Columbus, Ga., $18,5485, paving, Rds. 83 and 187, from Freeport to De Funiak Springs and from Road 10 to Ala. State Line, Jobs. 6005-104 and 6606-105, Walton Co.***Jaxon Constr. Co.,** 905 Baker Ave., Jacksonville, Fla., $133,499, paving county wide roads, Jobs. 7265-150, 7269-150, 7264-150, 7262-150, 7263-150, 7267-950, 7266-150 and 7268-950, Duval Co.***J. D. Manly Constr. Co.,** Leesburg, Fla., $255,765, grading, stabilizing, paving, drainage, structures, State Rds. No. 25 and 500, between 14 St. in Leesburg and point just east of east city limits of Leesburg, Job 2107-207, F 022-1 (1), Lake Co.

Ewell Eng. & Constr. Co., Lakeland, Fla. $287,584, stabilizing, paving, State Rd. 700, between Lorida and Fort Baseenger, S-164 (2), Job 0951-201, Highlands Co.***J. W. Conner & Sons, Inc.,** P. O. Box 2522, Tampa, Fla., $454,052, grading, paving, small drainage structures, Road 491 from Road 480 to Lecanto Job $208-103, Citrus Co.***Rubin Constr. Co.,** West Palm Beach, Fla., $239,759, resurf. Roads 80 and 25, from Clewiston to Palm Beach Co. line, Job 0703-106, Hendry Co. Road 80, from Road 827 to Road 716, Job 9311-115, Palm Beach Co.***Cone Bros. Constr. Co.,** P. O. Box 1301, Tampa, Fla., $499,034, grading, paving, structures Road 50 from point approx. 1.5 mi. southeast of Rital to With Iacoochee River, Jobs 0807-105 and 0806-104, Hernando Co.***Coggin & Deermont,** Chipley, Fla., $80,558, resurf. Road 20, from Freeport to Bruce Job 6003-107, Walton Co.***Scott Constr. Co.,** Thomasville, Ga., $132,094, grading paving Road 127 from Road 125 to Baxter, Job 2706-102, Baker Co.

Fairchild-Florida Constr. Co., Live Oak, Fla., $127,307 grading, paving, Road S-351, in Cross City from Road 55 to north city limits along Cedar St., Road S-351, Job 3051-150, Dixie Co.***White Constr. Co.,** Bronson, Fla., $204,934, paving Road S-360, from Sirmans to Madison, Job 3575-106, Madison Co.***James H. Craggs Constr. Co.,** Ocala, Fla., $567,638, grading, paving structures Road 30, from Aucilla River to Blue Springs, Job 3809-106, Taylor Co.****Doyle Pope,** Quincy, Fla., $79,759, grading, paving, structures, Road S-22, from Cove Boulevard to Road 77, Job 4651-101, Bay Co.***Faulk & Coleman Constr. Co.,** 4 Points Woodville Hy., Tallahassee, Fla., $116,413, wid'n, existing pavement and surf. course Road 10 through Chattahoochee Job 5001-111, Gadsden Co.; cancelled bids to have been opened June 5, grading, paving, drainage structures Road 50, from Hernando Co. line to Tarrytown, Job 1803-107, Sumter Co., FLORIDA State Hy. Dpt., Tallahassee, Fla. Bids June 5. CD 5/28.

▲ **Christie, Hutchison & Burton,** 812 S. 27 St., Birmingham, Ala. Low Bidders, $899,090, Contract 1; **Blythe Bros. Constr. Co.,** 2911 Hutchinson Ave., Charlotte, N. C., $1,411,070, Contract 2, Sect. A-1, Village Creek Collecting Sewerage System, BIRMINGHAM, ALA. Jefferson Co. Court House, Birmingham, Ala. Bids June 4. CD 5/29.

LOW BIDDERS—BUILDINGS

▲ **John A. Johnson & Sons, Inc.,** 303 41 St., Brooklyn, N. Y. Low Bidder. $1,492,000. 190 HOUSING units, NORFOLK, VA. Norfolk Redevelopment & Housing Auth., Dickson Bldg., Norfolk, Va. Bids June 6. CD 5/22.

▲ **S. J. Curry & Co.,** Albany, Ga. Low Bidder. $1,556,605. 225 HOUSING units, CORDELE, GA. Cordele Housing Auth., Cordele, Ga. Bids June 12. CD 5/18.

▲ **Grove, Shepherd, Wilson & Kruge, Inc.,** 247 Park Ave., New York, N. Y. and **Nute E. Haywood,** 1709 Hayes St., Nashville, Tenn. Low Bidders. $2,205,140. HOSPITAL, CLARKSVILLE, TENN. Montgomery Co., Clarksville, Tenn. Bids June 7. CD 5/16.

▲ **Daniel Constr. Co.,** 429 N. Main St., Greenville, S. C. Low Bidder. $1,624,394. HOSPITAL, COLUMBIA, TENN. Maury Co., Columbia, Tenn. Bids June 4. CD 5/17.

CONTRACTS—HEAVY CONSTRUCTION

▲† **Charles H. Tompkins Co.,** 907 16 St. N. W., Wash., D. C. Contract Awarded. $1,500,000, sewage treatment plant, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. CD 5/17, under LB.

CONTRACTS—BUILDINGS

▲ **Batson-Cook Co.,** West Point, Ga. Contract Awarded, $1,498,000, HOUSING units, GRIFFIN, GA. Griffin Housing Auth., Griffin, Ga. Bids June 7. CD 5/22.

▲ **J. W. Bateson,** Irwin-Kessler Bldg., Dallas, Tex., Contract Awarded. $1,923,606, Project Ala. 49-1, 224 HOUSING units, GADSDEN, ALA. Gadsden Housing Auth., Gadsden, Ala. Bids May 18. CD 5/24, under LB.

▲ **R. P. Farnsworth & Co.,** 1515 S. Salcedo St., New Orleans, La. Contract Awarded. $1,486,000, Project Ala. 47-1, housing units, HUNTSVILLE, ALA. Huntsville Housing Auth., Huntsville, Ala. Bids June 5. CD 5/24.

▲ **Mac D. Saxon,** 6 Cherry St., Montgomery, Ala., Contract Awarded, $1,347,493, Projects Ala. 61-1 and 62-2, HOUSING units, LANNETT, ALA. Lannett Housing Auth., Lannett, Ala. Bids June 5, CD 6/8, under LB.

▲† **Southeastern Constr. Co.,** Peoples Bldg., Charleston, W. Va. Contract Awarded. $2,887,436, eight 225-man BARRACKS, FORT CAMPBELL, KY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. CD 6/13, under LB.

▲ **W. R. Sproles Constr. Co.,** Kingsport, Tenn. Contract Awarded. $1,663,000. 189 HOUSING units, KINGSPORT, TENN. Kingsport Housing Auth., Kingsport, Tenn. CD 6/8, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Mich., Grand Blanc—PLANT—Bids Asked—Fisher Body Div. General Motors Corp., Grand Blanc, foundation for 1 story, masonry plant, Total est. $750,000. Argonaut Realty Div. General Motors Corp., 304 General Motors Bldg., Detroit, archts.

CONTRACTS—BUILDINGS

▲ **Percy Loiselle,** Kankakee, Ill. Contract Awarded, $3,000,000, PLANT, KANKAKEE, ILL. Gould-National Batteries, Inc., Kankakee, Ill.

WEST OF MISSISSIPPI

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Reno Constr. Co.,** Overland Park, Kan. Low Bidder. $2,927,000, airfield imprv. at Naval Air Station, OLATHE, KAN. Ninth Naval Dist., Great Lakes, Ill. Bids June 8. CD 2/15.

▲† **Steinberg & Son,** 2111 S. Harwood St., Dallas, Tex., Low Bidder, $1,338,766, rehabilitation buildings and facilities at Bryan Air Force Base, Inv. No. Eng 41-243-51-73, near BRYAN, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., Bids June 8. CD 5/23.

CONTRACTS—BUILDINGS

Paschal-Sanders Constr. Co., 3602 Linden St., Fort Worth, Tex., Contracts Awarded, $598,000, est. $648,000. 2 HOUSING units, (1) 16 units (2) 70 units, BROWNWOOD, TEX. Brownwood Housing Auth., Brownwood, Tex. Bids June 5, awarded June 9. CD 5/25.

Merritt & Roe, 402 E. Cano St., Edinburg, Tex., Contract Awarded, $742,956. 100 DWELLING units for total 36 bldgs.,, Tex. 62-A, EDINBURG, TEX. Edinburg Housing Auth., Edinburg, Tex., Bids May 22, awarded June 8. CD 5/25, under LB.

FAR WEST

LOW BIDDERS—HEAVY CONSTRUCTION

Wallace & Wallace, S. 18 Ave., Phoenix, Ariz., Low Bidder, $491,960, 8 mi. new alignment, grading, draining bit. Wickenburg-Ehrenburg Hy., Maricopa Co., ARIZONA State Hy. Dpt. 17 Ave. and Jackson St., Phoenix, Ariz. Bids June 8. CD 5/29.

▲ **Griffith Co.,** 1060 S. Broadway, Los Angeles, Calif., Low Bidder. $1,303,598, grading, surf. 9 mi. on Ramona Freeway between Hellman Ave. and 8 St., Alhambra, Los Angeles Co.; **George Herz,** 234 S.E. St., San Bernardino, Calif., $77,260 seal coat approx. 45.2 mi. various locations, San Bernardino, Riverside and Orange Counties, CALIFORNIA. State Div. Hys. P. Wks. Bldg., Sacramento, Calif. Bids June 7. CD 5/14.

Rhoades-Shofner Constr. Co., 3869 Medford St., Los Angeles, Calif. Low Bidder. $464,929, concrete lined tunnel and approx. 0.1 mi. roadway grade and paved with c. conc. at Gaviota Gorge, approx. 1.5 mi. south Las Cruces, Santa Barbara Co. CALIFORNIA. State Div. Hys., P. Wks. Bldg., Sacramento, Calif. Bids June 6. CD 5/14.

McGuire & Hester, 296 66 Ave., Oakland, Calif., Low Bidder. $294,506, sanitary and storm sewers, Unit 1, ALAMEDA, CALIF. City, City Hall, Alameda, Calif. Bids June 5. CD 5/25.

▲ **G. E. Kerns,** 5574 Atlantic Blvd., Long Beach, Calif., Low Bidder, $1,397,456, storm drain in Alameda St. Lacy St. to Los Angeles River, LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids June 23. CD 5/28.

F. W. Smith, San Mateo, Calif., Low Bidder, $84,181, grading, surf. in Airport Park Subdivision, MILLBRAE, CALIF., City, City Hall, Millbrae, Calif. Bids May 15.

† **American Pipe & Steel Co.,** 2201 Commonwealth St., Low Bidder. Alhambra, Calif. $140,484, underground fuel storage tanks, at Naval Air Station, Los Alamitos, Brown Field, and Naval Auxiliary Air Station, Crows Landing. Spec. 30184, SAN DIEGO, CALIF. Eleventh Naval Dist., San Diego, Calif.

LOW BIDDERS—BUILDINGS

▲ **Zoss Constr. Co.,** 401 N. Ave. 19, Los Angeles, Calif., Low Bidder. $3,350,000 new JUVENILE HALL, LOS ANGELES, Calif. Bd. Supervs., Los Angeles Co., Hall of Records, Los Angeles, Calif. CD 4/25.

Johnson, Drake & Piper, 9009 San Leandro St., Oakland, Calif. Low Bidder. $639,345, general constr. PHYSICAL EDUCATION BLDG., and other bldgs., at Calif. Vocational Institution, CHINO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids June 5. CD 5/7.

CONTRACTS—HEAVY CONSTRUCTION

Whiting & Haymond, Springville, Utah. Contract Awarded. $117,647, est. 100.854, 19.405 mi. 2 in. road mixed bit. roadway surf. between Vernon and St. John, FASP No. S-173 (5), Tooele Co. **Germer, Abbott & Waldron,** Tremont, Utah. $196,203, est. $176,654, plant mixed bit., roadway surf. 3.029 mi. between Idaho State Line and Curlew Junction, FAP No. FI 109 (13), Box Elder Co., UTAH. State Road Comn., State Capitol, Salt Lake City Utah. Bids June 6.

† **General Electric Co.,** 670 17 St., Denver, Colo. Contract Awarded, $132,104, four new sets windings for Bank No. 3, power transformers at Phoenix substation, Davis Dam Proj., Spec. D.S. 3370, ARIZONA Bureau Reclamation, Dpt. Interior, Bldg. I-A, Denver Federal Center, Denver, Colo. Awarded June 6.

▲† **Minnis & Shilling and United Concrete Pipe Corp.,** Baldwin Park, Calif. Contract Awarded. $1,424,953, est. $1,160,044, earthwork, asph. membrane lining pipe lines, structures for 81 mi. AREA E-3 laterals and sublaterals East Low Canal laterals, Columbia Basin Proj., Spec. DC-3356, Schedule 1, WASHINGTON Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids May 23, awarded June 5. CD 6/1, under LB.

▲† **Peter Kiewit Sons Co.,** Longview, Wash. Contract Awarded, $3,724,713, est. $4,432,000, grading, paving, lighting 8,000 ft. runway, 200 ft. wide,

Spec. 26405, WHIDBEY ISLAND, WASH. P. Wks Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, ash. Bids June 1. CD 6/6, under LB.

▲ General Constr. Co., Box 3244, Portland, Ore. Contract Awarded, $1,074,350, 6.96 mi. hydraulic placed embankment, Columbia River Hy., FAP FI-174 (11) and FI 35 (4), Hood River and Wasco Counties, ORE-GON, State Hy. Comm., Hy. Bldg., Salem, Ore. Bids Apr. 12, awarded June 9. CD 4/18, under LB.

▲† Guy F. Atkinson Co., 10 W. Grange Ave., South San Francisco, Calif. Contract Awarded, $1,463,721, est. $1,736,059, earthwork for powerhouse, warehouse, penstock, etc. for Folsom Power Plant, Folsom, CALIFORNIA, Bureau Reclamation, Old Post Office Bldg., Sacramento, Calif. Bids May 29. CD 6/7, under LB.

† Haddock Engineers Ltd., 1616 S. Greenwood St., Montebello, Calif. Contract Awarded, $797,370 addnl. aviation fuels storage to support jet operation at 3 airfields, in Miramar, North Island, and Brown Field, in SAN DIEGO, CALIF. Dpt. Navy, Yards & Docks Annex, Arlington, Va. CD 1/8, under Calif., Miramar.

CONTRACTS—BUILDINGS

† Toiboe & Harlin Constr. Co., Dooly Bldg., Salt Lake City, Utah. Contract Awarded $533,238. POWER PLANT extens. and rehabilitation and simulant laboratory in "D" area Dugway Proving Grounds, TOOELE, UTAH. U. S. Eng., 74 New Montgomery St., San Francisco, Calif. Bids May 29. CD 6/7, under LB.

▲ A. Balch, 8050 35 Ave. N. E., Seattle, Wash. Day Labor $1,100,000. 70 HOUSES in Wedgwood Addition No. 4, SEATTLE, WASH. Grainger, Thomas & Baar, Arcade Bldg., Seattle, 1, Wash., archts.

E. F. Shuck Inc., 535 Pontius St., Seattle, Wash. Contract Awarded. Approx. $900,000, steel rolling MILL, SEATTLE, WASH. Seidenhurber Steel Rolling Mill Corp., 1693 E. Swamish St., Seattle, Wash. W. C. Creighton, 8001 32 Ave. N.W., Seattle, engr. H. Bittman, Securities Bldg., Seattle, 1, Wash., archt. CD 6/1.

▲ Barrett & Hilp, 234 W. 14 Pl., Los Angeles, Calif., Contract Awarded, $1,595,863, est. $1,900,000, 2 story reinforced concrete St. Johns HOSPITAL addn., OXNARD, CALIF. Sisters of Mercy, 333 N. "F" St, Oxnard, Calif. CD 4/13, under LB.

▲† MacDonald, Young & Nelson, Inc. & Morrison-Knudsen Co., Inc., 351 California St., San Francisco, Calif. Contract Awarded, $3,096,711, general purpose bldg. maintenance shop, Sacramento Signal Depot, Spec. 1544 SACRAMENTO, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Awarded June 6/6. CD 6/11, under LB.

▲ F. E. Young Constr. Co., 2141 Main St., San Diego, Calif. Contract Awarded, $1,286,313, addnl facilities at Horace Mann Junior High SCHOOL, SAN DIEGO, CALIF. San Diego Unified School Dist., 825 Union St., San Diego, Calif. Bids May 15. Frank Houpe, 1447 6 Ave., San Diego, Calif., archt. CD 11/16/50.

▲† Zoss Constr. Co., 1037 Cole Ave., Los Angeles, Calif. Contract Awarded, $2,008,616, rehabilitation Camp San Luis Obispo, Eng 043-15.641-82, SAN LUIS OBISPO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Bids June 7, awarded June 11. CD 6/11, under LB.

ALASKA

CONTRACTS—BUILDINGS

▲† J. C. Boespflug Constr. Co. & Assoc., 1912 4 Ave. S., Seattle, Wash. Contract Awarded, $3,167,262. 5 organizational maintenance SHOPS and extens. to 1 bldg. Inv. No. SAS-507-51-78, FORT RICHARDSON, ALASKA. U. S. Eng., New Washington Hotel, Seattle 4, Wash. Bids May 15, Awarded June 6. CD 5/22, under LB.

CANADA

BIDS ASKED—BUILDINGS

Ont., Camp Borden—MESS—B.A. 6/26—S. M. Connolly, engr. Defense Constr. Ltd., 441 Queens' Quay W., Toronto 2B, Ont. D. R. Mess No. 2 (500 men) at Camp Borden (job 1336). Approx. $700,000. Plans deposit $50.

CONTRACTS—HEAVY CONSTRUCTION

Terminal Constr. Co. Ltd., Dominion Square Bldg., Montreal, Que. Contract Awarded, Approx. $730,000, buildings and R. R. bldg at R.A.C.F. Station, GOOSE BAY, LABRADOR. Defense Constr. Ltd., Montreal, Que.

Sterling Constr. Co. Ltd., 2484 Sandwich St. East, Windsor, Ont. Contract Awarded, $314,325, 22 mi. asph. pavement, CHATHAM, ONT., Kent Co., Municipal Bldg., Chatham, Ont. W. D. Colby, co. engr. Awarded June 8.

McNamara Constr. Co. Ltd., 42 Industrial St., Leaside, Ont. Contract Awarded, Approx. $53,437, dredging Eastern Channel, 156,250 cu. yd.; $370,770, dredging 453,200 cu. yd. class A and B material at Queens Wharf, TORONTO, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids June 6.

CONTRACTS—BUILDINGS

▲ Brown & Root Ltd., c/o Brown & Root, 4100 Clinton Dr., Houston, Tex., U.S.A. Contract Awarded, Approx. $46,000,000, CHEMICAL PLANT on 300 acre property 7 mi. east of EDMONTON, ALTA. Canadian Chemical Co., Ltd., c/o Celanese Corp. of America, 180 Madison Ave., New York, N. Y. Main, Rensaa & Munsos, MacCosham Bldg., Edmonton, Alta., engrs. Awarded June 8. CD 3/30.

OFFICIAL PROPOSALS

Bids: July 19, 1951

Contract No. 17—Front Range Light Structure

THE DELAWARE MEMORIAL BRIDGE
NOTICE TO BIDDERS

Sealed proposals for the construction of the Front Range Light Structure in the Delaware River adjacent to "The Delaware Memorial Bridge" near Wilmington, Delaware, will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Continental American Building, Wilmington, Delaware, until 12 o'clock noon Eastern Daylight Saving Time (11:00 A.M., Eastern Standard Time), July 19, 1951 at which time and place said proposals will be publicly opened and read.

The work involves the following approximate principal quantities:

2,560 lin. ft. Steel Piles (227,840 lbs.)
180 cu. yds. Concrete
One Structural Steel Tower (3,200 lbs.)

Performance of this contract shall begin promptly after execution of the contract and shall be completed on or before December 1, 1951.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms furnished by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check for a sum equal to at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the Plans and two copies of the Specifications may be obtained from the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y., after June 20, 1951, upon payment of $10.00.

Any prospective bidder who has made such a deposit may secure extra blueprint copies of the Plans upon payment of 50 cents per drawing and an extra copy of the Specifications upon payment of $2.50 per copy.

Plans and Specifications need not be returned to the Engineers, and the above payments will not be refunded.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, Continental American Life Insurance Building, Wilmington, Delaware, or at the office of the Engineers, Howard, Needles, Tammen & Bergendoff.

State Highway Department
J. Gordon Smith, Chairman
W. A. McWilliams, Director
Delaware Crossing Division
Wilmington, Delaware
June 18, 1951

Bids: July 24, 1951

Notice of Change of bid date.

ARLINGTON, VIRGINIA

The date for receipt of bids for extension to the sewage treatment plant, Arlington, Va., has been changed from June 25, 1951 to July 24, 1951. The time and place 2:00 P.M., E.D.S.T., in the Office of the County Manager, Courthouse, Arlington, Virginia, remain unchanged.

A. T. LUNDBERG
County Manager

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF HIGHWAYS, D. C., June 14, 1951. SEALED PROPOSALS will be received in Room 509, District Building, 14th and 'E' Streets, N.W., Washington 4, D. C., until 2:00 P.M., EASTERN DAYLIGHT SAVING TIME, July 6, 1951, and then publicly opened and read for repainting Chain Bridge crossing the Potomac River on Canal Road, Northwest, Washington, D. C. The bridge consists of an eight span deck plate-girder structure with two girders per span. The length center to center of end bearings is 1,351 feet and the approximate weight of structural steel is 1430 tons. Proposal forms, specifications and drawings may be obtained in the Office of Chief Clerk, Room 427, District Building, Washington, D. C., without charge (Telephone NAtional 6000, Extension 2378).

U. S. Government

Bids: July 27, 1951:

NOTICE TO CONTRACTORS
UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIES
WASHINGTON, D. C.

Sealed proposals will be received by the District Engineer for the Virgin Islands, Department of the Interior, Post Office Box No. 479, St. Thomas, Virgin Islands, until 2:00 P.M. Atlantic Standard Time on July 27, 1951, for the construction of the following work at St. John, Virgin Islands, comprising approximately the following quantities in the major items:

PROJECT NO. 53-104—POTABLE WATER FACILITIES, ST. JOHN, Virgin Islands
2,700 Sq. Yds.—3" Concrete Catchment Pavement
850 Lin. Ft.—Masonry Catchment Wall and Fence
1 Ea.—100,000 Gallon Concrete Reservoir
1 Ea.—25,000 Gallon Masonry Reservoir
900 Lin. Ft.—C. I. Pipe (2" to 8")

At above time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

The right is reserved, as the interest of the Government may require, to reject any and all bids; to waive any informality in bids received; and to accept or reject any or all items of any bid, unless the bidder qualifies such bid by specific limitation. In the event all bids are rejected, the Government may therefore adopt any of the authorized procedures such as readvertisement, negotiation with rejected bidders and deferment or postponement of the project. The Government also reserves the right to award contracts for the Cruz Bay water facility or the Bordeaux water facility or for both water facilities whichever is in the best interests of the United States.

Plans and specifications and other proposed contract documents are open for public inspection at the Office of the District Engineer for the Virgin Islands, Thomas G. Mooney, Charlotte Amalie, St. Thomas, Virgin Islands; R. L. Kenan and Associates, Consulting Engineers, Bell Building, Montgomery, Alabama; U. S. Department of Commerce No. 2, Puerto Rican Reconstruction Administration Ground, Building N, San Juan, Puerto Rico; Lester M. Marx, Special Assistant to the Director, Room 2713, Interior Building, Washington 25, D. C.; AGC Office, 1113 Congress Building, Miami 32, Florida; Builders' Exchange, 46 Northeast 6th Street, Miami, Florida; and F. W. Dodge Corporation, 119 W. 40th Street, New York City, N. Y.

A set of such documents may be procured from the first two of the above-listed offices upon deposit of $20.00 by certified check payable to the United States of America, all of which will be refunded to bonafide bidders upon the return of plans and specifications in good condition, within seven days from date of bid opening.

To parties who procure plans and specifications upon payment of $20.00 and who do not submit a bid, $15.00 will be refunded provided same are returned within seven days from date of bid opening. No refund will be made for return after this time.

Each proposal must be accompanied by a bid security in an amount of not less than 5 percent of the total bid.

The successful bidder will be required to furnish a performance bond in an amount equal to 100 percent of the contract price, and a payment bond in an amount equal to 100 percent of the contract price, such bonds to cover full performance of the contract and payment for labor and materials.

No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 30 days.

LESTER M. MARX
Contracting Officer
Office of Territories

(Continued on page 111)

OFFICIAL PROPOSAL

RATE: $1.25 per line (or fraction) per insertion.

CLOSING DATE: 2:00 P.M. Thursday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS

(Continued from page 110)

Bids: July 2, 1951

Construction of Creek Drain Section 1-A

Sealed proposals will be received at the office of the City Clerk, City Hall, Pontiac, Michigan, until 4 o'clock P.M. (Eastern Standard Time) of Monday, July 2, 1951, at which time the bids will be publicly opened and read by the Clerk and the rates of bids for the different items noted, for the construction of Pontiac Creek Drain Section 1-A.

The quantities involved in this work consist principally of the following:

Retaining wall in place, as per plan, 112.88 lin. ft.; Variable Height Retaining wall, as plan, 60.88 lin. ft.; Porous backfill for retaining walls, in place, 128.8 cu. yd.; Concrete closing wall, 1 each; 7' x 6' Dual Box Section, as per plan, 286 lin. ft.; Junction Chamber Sta. 3+00, 1 each; 9'6" or 10' RCP in open cut Sta. 3+19 to Sta. 6+00 and Sta. 20+00 to Sta. 30+64, 1345 lin. ft.; 9'6" or 10' RCP in open cut Sta. 6+00 to Sta. 9+00 and Sta. 17+50 to Sta. 20+00, 550 lin. ft.; 9'6" or 10' Monolithic concrete in tunnel, including necessary shafts, 850 lin. ft.; Concrete cradle, as per plan, Sheet 13, 1000 lin. ft.; Inlet Structure, 1 each; Sanitary Trunk Sewer Reinforcement Sta. 2+45, 35 lin. ft.; Sanitary Trunk Sewer Reinforcement Sta. 11+00, 20 lin. ft.; Deep Manhole on 9'6" or 10' pipe, 2 each; Standard Manhole on 9'6" or 10' pipe, 2 each; Standard Inlet, 4 each; Standard Manhole, 2 each; Rebuild Inlet, 1 each; 8" V.S.P. Sanitary Sewer, 195 lin. ft.; Standard Manhole, Sanitary, 2 each; Drop structure for sanitary manhole, 1 each; 6" Risers—Type 'A' & Connect, 6 each; Bulkhead existing 8" Sanitary sewer, 1 each; 15" Storm Drain, 42 lin. ft.; 12" Storm Drain, 100 lin. ft.

The Plans and Specifications for the work may be examined at the office of the City Engineer, Pontiac, Michigan, or copies may be obtained by making a deposit of Ten Dollars which will be refunded upon their return in good condition within 5 days from date of bidding.

A certified check or bid bond for a sum not less than 5% of the amount of the proposal will be required with each proposal as a guarantee of good faith and the same to be subject to the conditions stipulated in the instructions to bidders.

The right to accept any proposal, to reject any or all proposals, and to waive defects in proposals is reserved by the City.

By Order of the Commission
ADA R. EVANS, City Clerk
LEWIS M. WRENN,
City Engineer

Bids: July 2, 1951

Partition Alterations on Tenth and Eleventh Floors

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
CONTRACT EXD-120.010

Sealed proposals for partition alterations on the tenth and eleventh floors of the Port Authority Building will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1700, 111 8th Ave., New York 11, until 11:30 A.M., Monday, July 2, 1951 at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, June 21, 1951

Bids: July 3, 1951

Bridge

NOTICE TO CONTRACTORS

Sealed bids for furnishing labor, equipment, tools, materials, not furnished by Owner, and performing all work of raising 3-200 ft. steel spans, 1-200 ft. swing span, and 1-721 ft. cantilever span, of the New Orleans, Texas & Mexico Railway Bridge over the Atchafalaya River at Krotz Springs, St. Landry Parish, Louisiana, will be received by C. S. Kirkpatrick, Chief Engineer of the New Orleans, Texas & Mexico Railway, 204 Union Station, Houston, Texas, until 10 A.M., Central Standard Time, July 3, 1951, and then publicly opened. The Owner will furnish reinforcing and structural steel at Krotz Springs to raise bridge 6 feet on steel grillages encased in concrete. Further information upon application to C. S. Kirkpatrick, Chief Engineer, 204 Union Station, Houston, Texas.
June 2, 3, 4, 5—1951 July 1, 2—1951

Bids: July 3, 1951

Sewage Treatment and Disposal Plant

BOROUGH OF EDGEWATER

PUBLIC NOTICE is hereby given that sealed proposals for furnishing labor and materials for the construction as part of the sewerage system of the Borough of Edgewater, of a sewage treatment and disposal plant and additions to sewerage system, will be received by the Mayor and Council of the Borough of Edgewater, Bergen County, New Jersey, at the Council Chambers of the Municipal Building on the 3rd day of July, 1951, at 7:00 o'clock P.M., as follows:

Contract #1—Treatment and Disposal Plant
Contract #6—Four Pump Houses
Contract #2—Electrical Work — Treatment Plant
Contract #7—Electrical Work — Four Pump Houses

Copies of the plans and specifications may be seen at the office of the Borough Clerk in the Municipal Building, Edgewater, New Jersey. Copies of the plans and specifications may be obtained by the payment of $50.00 in cash or certified check, at the office of Roscoe P. McClave, Consulting Engineer, 600 Gorge Road, Cliffside Park, New Jersey, by bidders during business hours from noon June 8, 1951 to noon June 29, 1951, after which date no further plans and specifications will be obtainable. The payment of $50.00 for the plans and specifications is not returnable.

The Mayor and Council hereby reserves the right to reject any or all bids.

PETER F. O'BIEN
Borough Clerk

Bids: July 3, 1951

Test Borings

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

TEST BORINGS—ROUTE 25

For the making of test borings at the site of the proposed bridge on Route 25 over the Hackensack River between Kearny and Jersey City, Hudson County. The estimated items involved are:

Estimated:
2,400 lin. ft. Casing Sunk to Rock
40 Lin. ft. Drill Core Borings
40 lin. ft. Core Preserved
213 drs. Samples Preserved

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, July 3, 1951 at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME) between o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the pre-qualification laws and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. ABBOTT
State Highway Commissioner

Bids: July 5, 1951

Constructing Masonry Filters and Regulator House

CONTRACT 209

SEALED PROPOSALS addressed to the Board of Contract and Supply of The Metropolitan District and endorsed "CONTRACT 209—PROPOSAL FOR THE CONSTRUCTION OF MASONRY FILTERS AND REGULATOR HOUSE AT THE FILTRATION PLANT IN THE TOWN OF WEST HARTFORD, CONNECTICUT", will be received at the Executive Offices of The Metropolitan District, 115 Broad Street, Hartford, Connecticut, until 2:15 P.M., Eastern Daylight Saving Time, Thursday, July 5, 1951, at which time and place they will be publicly opened and read.

The work to be done consists of the construction of four ½-acre, earth covered masonry Filter Beds, of so-called groined arch type of construction, Regulator House and appurtenant structures at the Filtration Plant in West Hartford; the principal materials, except concrete and Regulator House superstructure materials, furnished by the District.

Approximate quantities for the principal items:

Earth refill and embankment, 30,000 cubic yards
Filter gravel and sand, 11,000 cubic yards
Concrete masonry, 8,400 cubic yards
Placing reinforcing steel, 110 tons

Drawings and Specifications may be obtained on and after June 21, 1951, at the office of the Deputy Manager and Chief Engineer of The Water Bureau of The Metropolitan District, 115 Broad Street, Hartford, Connecticut, on deposit of twenty dollars ($20), in cash or certified or cashier's check made payable to The Water Bureau of The Metropolitan District which amount will be refunded if both are returned in good order within one month of date of opening of bids. No deposits will be refunded after that time. Specifications used in making a bid will be considered as returned.

Each proposal must be accompanied by a certified check for an amount covering not less than ten per cent. (10%) of the total amount bid, made payable to The Metropolitan District, or a bid bond in like amount, and a satisfactory surety bond, as stated in the Information for Bidders, for the total amount bid will be required of the successful bidder for the faithful performance of the contract.

BOARD OF CONTRACT AND SUPPLY,
By: Richard Dillon, Clerk.
Hartford, Connecticut,
June 11, 1951.

(Continued on page 112)

CONTRACTORS WATCH THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS
(Continued from page 111)

Bids: June 25, 1951

Senior High School

FOR BOARD OF EDUCATION
SYRACUSE, N. Y.

Sealed Proposals Will be Received at the office of the Commissioner of Contract and Purchase of the City of Syracuse, New York, 218 City Hall, Syracuse, New York, on June 25, 1951, until 1:30 p.m., Eastern Daylight Saving Time. On the same day and immediately thereafter, the sealed Proposals will be opened and publicly read by the Commissioner of Contract and Purchase, of the City of Syracuse, New York, 218 City Hall, Syracuse, New York.

The sealed Proposals are to be for:

Contract No. 1—General Construction
Contract No. 2—Electric
Contract No. 3—Plumbing
Contract No. 4—Heating
Contract No. 5—Sound System
Contract No. 7—Ventilation

For the William Nottingham High School (previously called East Side High School), located in the 2000-3100 block of East Genesee Street in the City of Syracuse, New York.

A certified check for $100.00 dollars or currency for each set of plans and specifications will be required by the Commissioner of Contract and Purchase from prospective bidders. The certified check or cash will be held by the Commissioner of Contract and Purchase, and, upon the return of the drawings and specifications, will be returned to the bidder.

Structural Steel for the building has been let previously and is designated as Contract #6.

Bids: July 3, 1951

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACTS NOS. 8I, 8IA, and 8IB

The work to be done under these Contracts comprises the installation of roadway and area lighting for service areas and interchanges along the Turnpike, and other work incidental thereto, all in connection with the construction of the New Jersey Turnpike.

Contract No. 8IA includes one (1) service area and three (3) interchanges all in Union and Essex Counties. Contract No. 8IB includes one (1) service area and three (3) interchanges all in Hudson and Bergen Counties.

Principal items of work for Contracts and Nos. 8IA and 8IB include:

	Contract No. 8IA	Contract No. 8IB
Trenching and Backfilling	22,300 lin.ft.	19,500 lin.ft.
Asbestos-Cement Conduit	18,500 lin.ft.	17,500 lin.ft.
Galvanized Wrought Iron Conduit	4,000 lin.ft.	2,500 lin.ft.
Underground Series Lighting Conductor	49,000 lin.ft.	43,000 lin.ft.
Lighting Standards	106 units	96 units
Luminaire Installation	106 units	96 units
Constant Current Transformer Installations	8 units	6 units

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock, Eastern Daylight Saving Time on the morning of July 3, 1951, and thereafter in the Veteran's Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M., Eastern Daylight Saving Time, on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their Proposal a revised financial statement and a statement of plant and equipment.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after June 12, 1951, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications, for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Where proposals are submitted for more than one contract, one check and one bond based on the largest amount of work included in a combination of proposals will be sufficient. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents. Bidders submitting proposals on more than one of the above contracts are required to submit only one financial statement and only one statement of plant and equipment.

The Contract will be awarded or the proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

June 8, 1951

Bids: August 6, 1951

Sewage Treatment Plant

EWING-LAWRENCE SEWERAGE AUTHORITY

Sealed bids will be received by the Ewing-Lawrence Sewerage Authority (mailing address, 156 West State Street, Trenton 8, New Jersey) until two o'clock P.M., Eastern Daylight Saving Time on the sixth day of August, 1951 at the Lawrence Township Hall on the Trenton-Princeton Road near West Church Road, for constructing a 3,800,000 gallons per day sewage treatment plant, in accordance with the plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York.

Copies of the plans and specifications may be obtained either from the Authority or from the Consulting Engineers upon deposit of Fifty Dollars, which sum will be refunded upon return of the plans and specifications in good condition within 20 days after the date on which bids are received.

The work to be performed is divided into four sections. The principal items of work are:

SECTION A—BUILDINGS AND STRUCTURES for a complete sewage treatment plant of 3.8 million gallons daily capacity, including a main building and pumping station, garage and pumping station, two primary clarifiers, two trickling filters, two secondary clarifiers, two sand filters, two sludge digestion tanks, sludge control building and heater building, four glass-covered sludge drying beds, chlorine contact chamber and outfall sewer, complete with all equipment, piping and appurtenances.

SECTION B—ELECTRICAL EQUIPMENT AND WIRING for the sewage treatment plant, including switchboards, controls, wiring, conduit and accessories.

SECTION C—HEATING including boilers, radiators, piping, controls and accessories.

SECTION D—PLUMBING including water supply, sanitary and drain fixtures, piping, connections and appurtenances.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in the State of New Jersey and satisfactory to the Authority in amount equal to ten percent of the proposal, and by an agreement from a qualified surety company binding the surety company to execute the required performance bond in the event the bidder is awarded the contract.

The Authority reserves the right to consider bids for thirty days after their receipt before awarding any contract and to accept any bid or to reject any or all of them.

EWING-LAWRENCE SEWERAGE AUTHORITY
By: Wilfred F. Predhome
Secretary

Bids: July 3, 1951

Route Construction

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 3, SECTION 2F

Construction of Route 3, Section 2F, Widening and Dualization, from Hudson Avenue, Secaucus, to Route 83, East Rutherford, Hudson and Bergen Counties. 0.936 mi.

Estimated:
33,382 cu. yds. Roadway Excavation—Earth
15,078 cu. yds. Borrow Excavation
7,587 sq. yds. Pavement Surface Removal, Bit. Conc.
5,572 sq. yds. Stone Shoulder
1,400 tons Pavement, Type MA-BC-2
7,197 sq. yds. Concrete Pavement Surface

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, July 3, 1951, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualifications of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. ABBOTT
State Highway Commissioner

(Continued on page 113)

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS
(Continued from page 112)

Bids: July 11, 1951

Machinery Wanted

COMMONWEALTH OF AUSTRALIA
JOINT COAL BOARD

Open Cut Coal Programme

TENDERS are invited, and will be received by the Secretary, Joint Coal Board, 66 King Street, Sydney, N.S.W., Australia, up to 2:15 p.m., on Wednesday, 11th July 1951, for the items of machinery specified in the undermentioned Schedule of Requirements.

TENDER NO. T.110

Item No.	Maximum Quantity	Description
Dragline Excavators		
1	4	Within the range of 12-30 c. yard heavy duty rock bucket capacity, on boom lengths as specified by manufacturers.
2	8	As above, 8-12 c. yard.
3	12	As above, 3½-8 c. yard.
Shovel Excavators		
4	5	Heavy duty quarry type, within the range of 4-6 c. yard bucket capacity; alternative dragline equipment, if available, is to be quoted separately.
5	5	As above, 2½-4 c. yard.
6	60	Standard basic quarry type, within the range of 3¼-2½ c. yard capacity, fitted with coal loading front end equipment and bucket.
Overburden Trucks		
7	80	Heavy duty type, within the range of 12½-15 c. yard struck measure.
Drilling Plant		
8	6	Blast Hole Type Churn Drills, suitable for drilling within the range of 6"-9" holes, complete with all tools and accessories.
9	6	Auger type, self propelled, horizontal drills suitable for drilling 6" holes, complete with 60 feet of augers and all tools and accessories.
10	6	Auger type, self propelled vertical Coal Drills suitable for drilling within the range of 2"-3½" holes, complete with all tools and accessories.
Compressors		
11	4	Mobile type, within the range of 150-300 c. feet of free air per minute at 100 lbs. per square inch.

NOTES

(a) Items 1, 2, 3 and 4 should preferably be electrically operated; diesel electric models will be considered.

(b) Item 5 should preferably be electric or diesel-electrically operated; diesel engine models will be considered.

(c) Items 6, 7, 8, 9 and 11 should be diesel engine driven.

(d) Item 10 should be petrol or diesel engine driven.

Further particulars and Tender Documents may be obtained on application to the Secretary, Joint Coal Board, 66 King Street, Sydney; the High Commissioner for Australia, Australia House, Strand, London, W.C.2 or the Australian Consulate General, 636 Fifth Avenue, New York City, New York.

Bids: July 24, 1951:

NOTICE TO CONTRACTORS
UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIES
WASHINGTON, D. C.

Sealed proposals will be received by the District Engineer for the Virgin Islands, Department of the Interior, Post Office Box No. 479, St. Thomas, V. I., until 2:00 P.M., Atlantic Standard Time on July 24, 1951, for the construction of the following hospitals:

Project No. 53-115—Construction of a 4-bed Public Health Facility at St. John, V. I.

Project No. 53-501(2)—Construction of a 12-bed General Hospital at Frederiksted, St. Croix, V. I.

Project No. 53-501(1)—Construction of a 60-bed General Hospital at Christiansted, St. Croix, V. I.

Project No. 53-101—Construction of a 116-bed General Hospital at Charlotte Amalie, St. Thomas, V. I.

At the above time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

The right is reserved, as the interest of the Government may require, to reject any and all bids; to waive any informality in bids received; and to accept or reject any or all items of any bid, unless the bidder qualifies such bid by specific limitation. In the event all bids are rejected, the Government may therefore adopt any of the authorized procedures such as readvertisement, negotiation with rejected bidders and others, or postponement of the project. The government also reserves the right to award contracts for the various items on the basis of the basic bid or by the adoption of any or all the "Deductible Alternates", whichever is in the best interests of the United States.

Plans and specifications and other proposed contract documents are open for public inspection at the office of the District Engineer for the Virgin Islands, Thomas G. Mooney, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; M. A. Dyer Company, 24 School Street, Boston, Massachusetts; Lester M. Marx, Special Assistant to the Director, Room 2713 Interior Building, Washington 25, D. C.; U. S. Department of Commerce No. 2, Puerto Rican Reconstruction Administration Ground, Building N, San Juan, Puerto Rico; AGC Office, 1113 Congress Building, Miami 32, Florida; Builders' Exchange, 46 NE 6th Street, Miami, Florida; and F. W. Dodge Corporation, 119 West 40th Street, New York City, N. Y. A set of such documents may be procured from any of the first three above-listed offices upon deposit of $50.00, by certified check payable to the United States of America, all of which will be returned to bonafide bidders upon the return of plans and specifications in good condition within seven days of date of bid opening.

Each proposal must be accompanied by a bid security in an amount not less than 5 percent of the total bid.

Subject to available appropriation, awards will be made on one, any, or all buildings, with or without the deductible alternates specified in the contract documents.

The successful bidder will be required to furnish performance bonds in an amount equal to 100 percent of their bids and payment bonds in an amount equal to 100 percent of their bids; such bonds to cover full performance of the contracts and payments for labor and materials.

No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 45 days.

LESTER M. MARX
Contracting Officer
Office of Territories

Bids: July 26, 1951

8 M.G.D. Sewage Treatment Plant and Pumping Station

Sealed bids will be received by the Board of Supervisors of Fairfax County, Virginia, at the Office of Sanitary Engineer, County of Fairfax, VEPCO Building, Fairfax, Virginia, until 2:00 o'clock, P.M., Eastern Daylight Saving Time, Thursday, July 26, 1951, for the construction of an 8 M.G.D. sewage treatment plant and a pumping station, known as "Contract No. 2" and promptly thereafter they will be publicly opened and read in the Board of Supervisors' Room, County Office Building, Fairfax, Virginia.

The principal units include grit removal, pumping, aeration, settling, chlorination, and sludge heating, digestion, conditioning, dewatering through filters, burning, grinding and storage. The contract is for the complete construction, including general structures, mechanical, electrical, heating and ventilating and plumbing.

Plans, specifications and contract documents may be examined at the Office of Sanitary Engineer, at the offices of various chapters of the Associated General Contractors and various Builders' Exchanges in Charlotte, N. C.; Raleigh, N. C.; Greensboro, N. C.; Columbia, S. C.; Baltimore, Md.; Richmond, Va.; Norfolk, Va.; Washington, D. C., and at the offices of the Dixie Contractor, Atlanta, Ga. Copies thereof may be obtained from Massey Engineers, Consultants, For Building, Fairfax, Virginia, upon deposit of $50.00. Refund of entire deposit will be made in case of actual bidders who return the documents in good condition within two weeks after the bidding date, and refund of 50% of deposit will be made in case of all others who return the documents in good condition within two weeks after bidding date.

Bids must be submitted on the forms supplied for this purpose and in strict accordance with the instructions therefor. Each bidder will be required to show evidence of possession of a certificate of registration as a contractor in the Commonwealth of Virginia before his bid will be considered. Each bid must be accompanied by a bid bond or certified check made payable to the Treasurer of Fairfax County, Virginia, in the amount of at least 5% of the total amount of the bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

The time for completion of the contract will be specified by the bidder and a bonus or penalty, as the case may be, will be applied for each day elapsing between the specified completion date and the actual completion date.

In view of the uncertainties of the cost of labor, material and equipment which may prevail during the life of the contract, and the desire to safeguard the mutual interests of the Owner and Contractor, payments will be made in accordance with the lump sum price bid, plus or minus an adjustment, not to exceed 1.5%, based upon any changes in ENR CONSTRUCTION Cost Index during the life of the contract.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

James J. Corbalis, Jr.
Sanitary Engineer, County of Fairfax
Fairfax, Virginia

May 30, 1951

Bids: July 10, 1951

Constructing Intercepting Sewers

NOTICE OF LETTING

CITY OF WILMINGTON, DELAWARE

Sealed proposals for furnishing materials and labor to construct Intercepting Sewer C, Contract No. 5 of the City of Wilmington's Sewage Treatment Program, will be received from qualified bidders by the Board of Directors of the Street and Sewer Department, Room 251, City Hall, until 2:00 P.M., Eastern Daylight Saving Time, July 10, 1951, at which time and place they will be publicly opened and read aloud.

The work embraces constructing approximately 9500 linear feet of 60" to 78" diameter pipe sewers; constructing approximately 1600 linear feet of 18" diameter pipe sewers, constructing two siphon chambers, one on each bank of the Christina River; improvements to the existing masonry and earth channel of Shipley Run; and other miscellaneous and appurtenant work.

Each bid shall be accompanied by a certified check in the amount of two (2) percent of the proposal, made payable to the Board of Directors, Street and Sewer Department, City of Wilmington, Delaware.

Drawings and specifications may be obtained from the office of the Board of Directors of the Street and Sewer Department of the City of Wilmington, Room 260, City Hall, or from the office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Twenty-five Dollars ($25.00) for each set of drawings and specifications, which deposit will be refunded upon return of the plans and specifications in good condition.

The Board of Directors of the Street and Sewer Department reserves the right to reject any or all bids and to accept the bid, which in its opinion best serves the interests of the City.

By order of
Board of Directors of the Street
and Sewer Department
Vaughan Clavey, President

Attested
James J. Livingstone, Secretary

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3411) will be received by Bureau of Reclamation, Ephrata, Washington, until July 10, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork and structures, west canal, Station 2816+66 to Station 3121+91.85, Frenchman Hills Wasteway, Station 0+50 to Station 157+00, Columbia Basin Project, Washington. The work is situated in the vicinity of Quincy, Washington. Principal items are approximately: excavation, 290,000 cu. yds.; concrete, 2,400 cu. yds.; furnishing and placing reinforcement bars, 327,000 lbs.; furnishing and handling cement, 2,750 bbls.; furnishing and erecting timber, 107.3 M.b.m.; and other work. Time allowed for completion will be 100 days. For particulars, address Bureau of Reclamation, Ephrata, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

SEARCHLIGHT SECTION

Classified Advertising

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WANTED
SALESMEN

To sell heavy construction equipment in the New York or New Jersey area. Salary, Commission, Expenses. Engineering or sales background preferred. Ages between 25 and 35 years. Reply by mail or call extension 11 for an appointment.

JAEGER-LEMBO MACHINE CORP.
Northern Blvd. & 127th St.
Box 128 Flushing, New York
Phone: Newtown 9-7777

HEAT EXCHANGER ENGINEER

Experienced in rating and selection of heat exchanger equipment for use in oil refinery, chemical plants and steam power plants; state age, education, previous experience and salary expected.

P-1080, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

GRADUATE ENGINEERS

without experience. Starting Salary $3,613.00 per year plus an increase July 1st. (Approximately 5% to 7½% is being considered). Write Detroit Civil Service Commission, 15th Floor Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

SALES ENGINEERS—District Sales Manager for large manufacturing concern in construction materials. Must have degree in Civil Engineering. Have experience in contacting engineers and contractors and be a resident of the South. Prefer native of Georgia as position is located in Atlanta. This is an excellent proposition and only those qualified will be interviewed. P-9877, Engineering News-Record.

ESTIMATOR—EXPERIENCED in pricing and purchasing for heavy construction, grading, paving and drainage contracts. Location Nassau County, N. Y. Salary open. Submit resume of experience, age and salary desired. P. O. Box 270, Hicksville, N. Y., or call Hicksville 3-0022.

WANTED ESTIMATOR qualified and experienced in quantity estimating for general contractor. First class man only. Write P. O. Box 472, Hampton, Virginia.

DRAFTSMEN—STRUCTURAL Steel Detailers experienced only. Alliance Engineering Co., 82 W. Washington St., Chgo., CE-6-2819.

STRUCTURAL ENGINEERS experienced in designing, checking and detailing Bridges, Building and Structures. Send complete experience record. Interview by appointment only. Ammann & Whitney, Consulting Engineers, 76 Ninth Avenue, New York 11, N. Y.

DETAILER AND Checker — experienced in making and checking shop details for steel fabrication plant. All types of steel construction. State experience, references, and rate expected. Savannah Machine and Foundry Company, P. O. Box 590, Savannah, Ga.

DRAFTSMAN — STRUCTURAL Steel, thoroughly experienced, Norfolk, Va. Give full details, salary desired. P-2969, Engineering News-Record.

CONSTRUCTION — WIRE Stringing. Heavy Transmission Lines. Line Constructors, 544 Benson Bldg., Sioux City, Iowa.

WANTED—CIVIL Engineer graduate, some concrete paving experience preferred, by long established engineering promotional and educational organization, to be field representative in the Long Island, N. Y., territory. Age 25 to 40. Give resume of education, engineering experience, and salary requirements in reply P-1039, Engineering News-Record.

CIVIL ENGINEER—10 years' experience desired in survey and layout work. Must be able and have had experience as chief of party. Give full details, age, marital and military status, education and experience by letter. Pace Associates, 53 West Jackson Blvd., Chicago 4, Ill.

CIVIL ENGINEER—Graduate with one or two years' field layout experience to act as instrument man in survey party. Give full details concerning age, marital and military status, education and experience by letter. Pace Associates, 53 West Jackson Blvd., Chicago 4, Ill.

HYDRO ELECTRIC Design Engineer. Graduate Civil Engineer with minimum (5) years experience design hydro-electric structures (Dams, Intakes, Tunnels, Canals, Penstocks, Power Houses, etc., and preparation of construction drawings) required by an established public utility service organization. Location New York. Attractive salary. Splendid opportunity for right man. Write giving age and fullest details of qualifications and experience. P-1049, Engineering News-Record.

SUPERINTENDENT — MUST have extensive experience on sewer construction working for a sewer contractor who specializes in sewer work. Reply giving age, experience, education and salary expected. P-1085, Engineering News-Record.

FOREMAN—MUST have experience on deep sewers working for a sewer contractor. Reply giving age, experience and salary expected. P-1086, Engineering News-Record.

EMPLOYMENT AGENCY

WANTED—ENGINEERS, Designers, Draftsmen-Structural, Piping, M.E., C.E., E.E. and Industrial, also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

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P-1077, Engineering News-Record
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P-1082, Engineering News-Record
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P-1076, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-1008, Engineering News-Record
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P-9537, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-9967, Engineering News Record
330 W. 42 St., New York 18, N. Y.

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P-9939, Engineering News-Record
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P-9872, Engineering News-Record
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P-9991, Engineering News-Record
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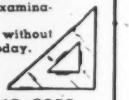

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PW-1019, Engineering News-Record
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FS-1060, Engineering News-Record
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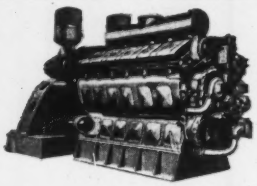

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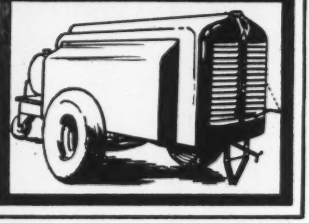

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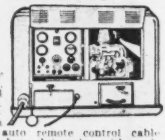

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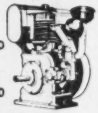

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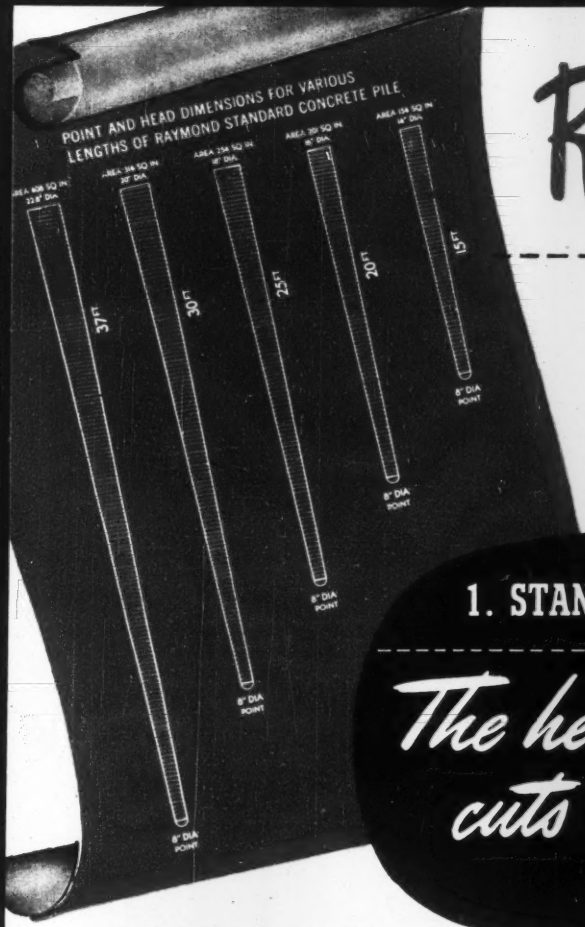

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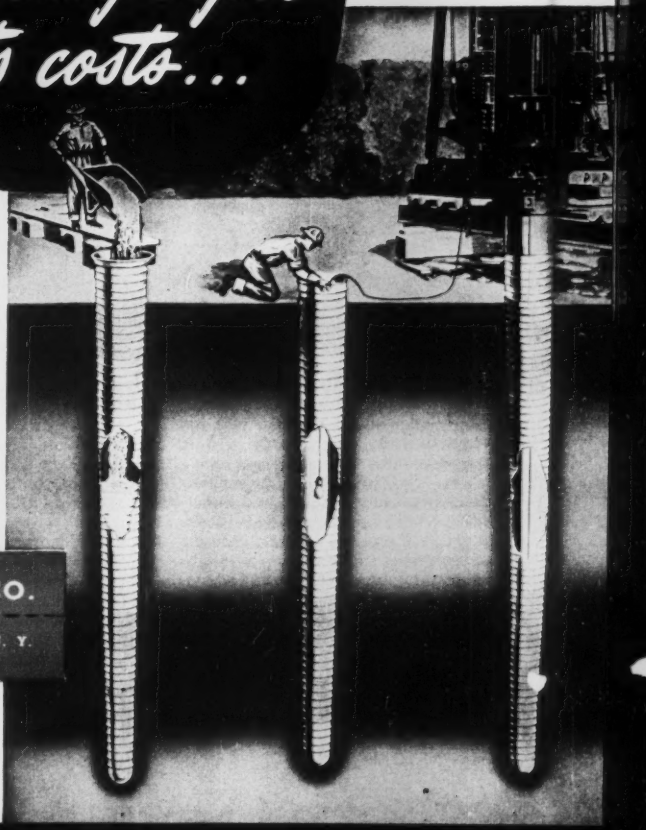

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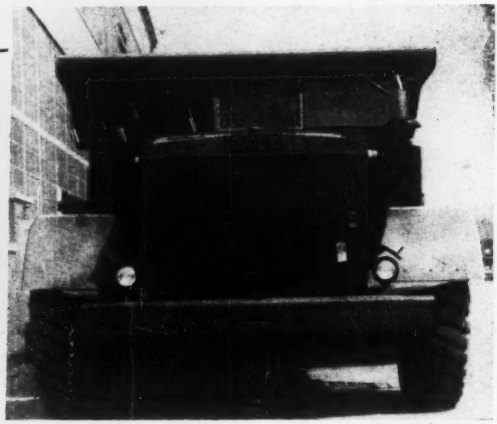


Fifty-ton capacity—and they call it The Monster!

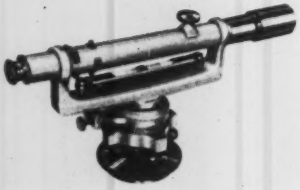
Appropriately named end-dump truck is the first of ten monstrous specially designed units built for the Western Contracting Corp.'s 18,000,000-yd rush job at Fort Randall Dam on the Missouri River. The Monster has a struck capacity of 32 yd; heaped capacity of 38 yd; and a load-carrying capacity of 100,000 lb. Power is provided by two 300-hp Cummins diesels, each engine driving one set of dual tandem wheels through a torque converter.

In keeping with the big scale of earth-moving operations, Western has ordered a special Marion 10-yd shovel that will completely load the truck in three passes.

These Euclids are big. The bodies are 22½ ft long, 11½ ft wide, inside, and 46 in. deep. They dump at 64 deg. Loading height is 10 ft 10 in. Bodies are dumped by two 8½-in. 3-stage double-acting hydraulic rams with a 6-ft stroke. Wheelbase is 18 ft 3 in.; over-all length is 36 ft 4 in.; over-all width is 13 ft 8½ in. Maximum height is 11 ft 8 in. from cab-guard to ground. All ten tires are the same size—1800x33, 24 ply. Chassis and body are mounted on semi-elliptic free-floating springs.

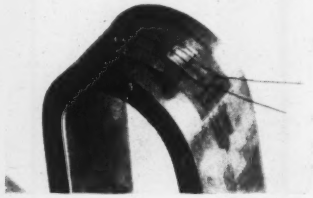
The Allison transmission permits three forward and one reverse speed. Maximum speeds in the three gear ranges are: Loaded, 8.8, 16.0, and 32.1 mph; empty, 9.4, 17.3, and 38.2 mph.

Heavy-duty air brakes and Vickers hydraulic booster steering make driving easy. The cab is offset to one side for better visibility. Fuel tank capacity is 440 gal.—THE EUCLID ROAD MACHINERY CO., CHARDON ROAD, CLEVELAND 17, OHIO.



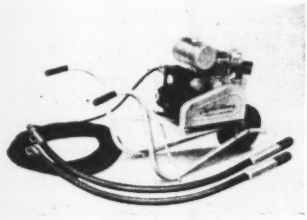
Builders' dumpy level

Short, compact dumpy level is specially designed for construction and irrigation work. The telescope is 13 in. long with external focusing and with a 1¾-in. objective lens. Achromatic lenses produce a flat field and a magnification of 19 diameters. Spiral screw in eyepiece provides accurate focusing on crosshairs. Effective appeture is 1¼ in.; minimum focus is 6 ft; and true field is 1½ deg. The 5¼-in.-long spirit level is sensitive to 60 sec of arc per 0.1-in. graduation. Weight of the instrument is 7 lb.—LEUPOLD & STEVENS INSTRUMENTS, INC., 4445 N. E. GLISAN ST., PORTLAND, ORE.



Strain gage

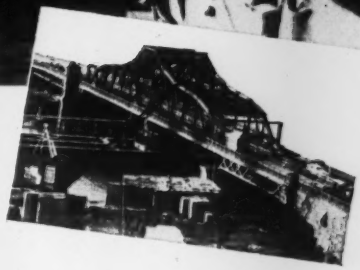
Measurement of strains up to 10% in materials or parts are possible with the Post-Yield SR-4 strain gage. Identified as Type PA-3, it enables measurement of strains beyond the range of standard SR-4 bonded-resistance wire strain gages. It has a flat-grid paper-base construction and requires a special air-drying cement supplied with it. Among the specifications listed for the PA-3 are that it has a resistance of 120 ohms and a gage factor of 2.0. Dimensions include a gage length of ¼ in. and a minimum trim width of ⅛ in. — BALDWIN-LIMA-HAMILTON CORP., PHILADELPHIA 42, PA.



Vibrator and light plant

Lightweight Master Champ Hycycle vibrator provides 10,300 vibrations per min. It will provide vibration anywhere within 300 ft of the power unit. Two single-phase outlets are provided for 1,200 watts of lighting. If only one of the two vibrator cables is used, the Master Champ will provide 600 watts of light. The complete unit weighs 172 lb. All power connections are watertight. Power is provided by a one-cylinder air-cooled Wisconsin gasoline engine rated 4.4-hp at 3,200 rpm.—MASTER VIBRATOR CO., 101 DAVIS AVE., DAYTON, OHIO.

(Continued on page 130)



BYERS WROUGHT IRON PLATES

INCREASE THE LIFE-SPAN OF NEW YORK'S UNIVERSITY HEIGHTS BRIDGE

Because bridge plates are not readily accessible for regular inspection and maintenance, the New York City Dept. of Public Works, Division of Bridges, took decisive steps to "maintenance-proof" the vulnerable areas on the reconstructed University Heights Bridge by specifying genuine wrought iron for the service. Byers Wrought Iron plate was used to cover the machine room in the central revolving turret section of the bridge. The insert photo shows the bridge under construction. This structure spans the Harlem River to connect Manhattan with the Bronx. Peerless Construction Co., N. Y., handled the fabrication job.

Leading bridge engineers all over the country have regularly used genuine wrought iron for this service, because of its proved corrosion resistance. This time-tested material not only meets the durability requirements, but provides bonus features in its ease of fabrication by riveting or welding to form long-lasting, water tight coverings over the bridge floor. The choice of genuine wrought iron for this application is supported by records of successful service in previous installations.

Our bulletin, WROUGHT IRON FOR BRIDGE CONSTRUCTION, illustrates and describes a number of applications of genuine wrought iron in bridges, and will provide some helpful tips if you are considering any projects, and want to avoid premature repairs and excessive maintenance. Write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

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ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

Wherever the "Black Horse" flag flies, you find proof of Merritt-Chapman & Scott's ability to carry construction projects to completion with speed, efficiency and at minimum cost.

And, because reputation for exceptional performance in *any* field *spreads*—and one job, *well done*, recommends others—you'll frequently find that M-C & S has an unusual record of achievement in a given industry. Take the case of pulp and paper where, over the past 15 years, we have constructed 19 new plants or additions for 13 different clients.

Whether your operation requires Industrial, Building, Marine or Heavy Construction, we'll show you conclusive evidence of our ability to take the toughest jobs in stride—and complete them on schedule.

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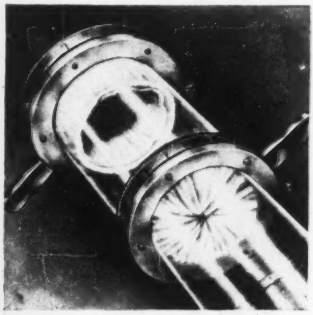
NEW PRODUCTS . . .

Three-ply synthetic board

Novoply board is made from small wood segments. This laminated paneling consists of a ⅛-in. surface of thin laminated wood sections, a core of medium size wood chips, and a back corresponding to the face. Wood segments are resin-coated and impregnated. While water-resistant, it is intended for interior use only.—UNITED STATES PLYWOOD CORP., 55 W. 44TH ST., NEW YORK 18, N. Y.



Bulk-flow control valve

Flow control valve is recommended for use with bins, hoppers, and chutes in weighing and blending operations, and for free air control in heating, ventilating, and drying. It has a flexible diaphragm that acts similar to the iris diaphragm of a camera—rotating the lever increases or decreases the opening, thus regulating the flow of material. Available in five sizes to fit openings up to 12 in.—SYNTRON CO., 328 LEXINGTON, HOMER CITY, PA.

Cellulose-fiber oil filter

Oil filter uses molded cellulose fibers as the filtering medium. Size of the fibers controls porosity of the cartridges. The blocks are rendered impervious to water and retain their original dimensions in use. The manufacturer states that these filters have a high dirt-retention capacity, and that there is no unloading action between filtration cycles.—THE BRIGGS FILTRATION CO., RIVER ROAD, WASHINGTON, D. C.

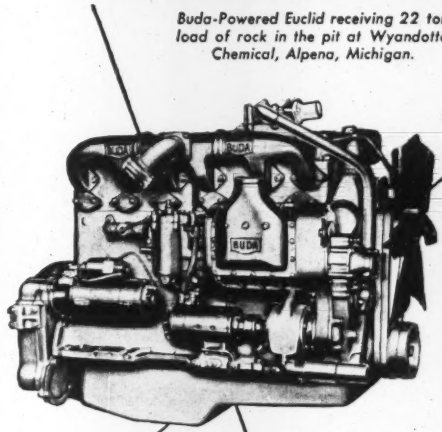
Rust preventive

Powerfilm rust and corrosion preventive is said to get under and displace any moisture present. When brushed, sprayed, or wiped on metal surfaces, it dries to a tough non-oily

(*Continued on page 133*)

14 BUDA SUPER Diesel-Powered "EUCS" Average 16 hrs. per day for 4 Years* *WITHOUT MAJOR OVERHAULS!*

Buda-Powered Euclid receiving 22 ton load of rock in the pit at Wyandotte Chemical, Alpena, Michigan.



The Buda 844 Super Diesels powering Wyandotte Chemical Company's 14 Model TD-14 Euclid trucks averaged 17,280 hours of operation over a 4 year period without major overhaul.

Buda Diesels provide high travel speeds for faster round trips.

Dependability like that, coupled with low operating cost . . . minimum maintenance and less downtime make Buda Diesels a good bet for any operator. Buda Diesels are giving mine operators more horsepower hours per dollar . . . more power . . . greater lugging ability and faster round trips under the toughest job conditions. Ask your nearby Buda Distributor for details on Buda dyna-swirl Diesels' outstanding performance on mine hauls like yours. Write for Bulletins and data today.

The Buda Company, Harvey, Illinois

**Work season—April through November.*

BC-12

BUDA — *a Power-Full and Dependable Name in Engines*

BUDA COAST TO COAST FACTORY EXPERIENCED SERVICE AND PARTS

Manufacturers of Diesel and Gasoline Engines, Railroad Products, Lifting Jacks, Earth Drills and Material Handling Equipment

Men who work with wire rope on hazardous construction jobs and men who keep production humming inside a plant have one viewpoint in common. Both like the reassurance that rides hoists equipped with *Preformed* Yellow Strand. Your employees will feel the same way. Not only schedules but lives may hinge on any one of this rope's inbred qualities: responsiveness to the operator . . . reserve strength . . . resistance to kinking, whipping and fatigue.

The hoist line for a specific derrick or crane will be dependent upon the string-up, drum and sheave sizes, speed and other conditions. A general rule favors 6x19 or 6x37 *Preformed* Yellow Strand, regular lay, with fiber core for flexibility. If abrasion and drum crushing are factors, as on excavators, another construction may be indicated. Let your B & B distributor help you rig up with long-wearing *Preformed* Yellow Strand.

Broderick & Bascom Rope Co., St. Louis 15, Mo.

Branches: New York, Chicago, Houston, Los Angeles, San Francisco, Portland, Seattle *Factories:* St. Louis, Peoria, Houston, Seattle

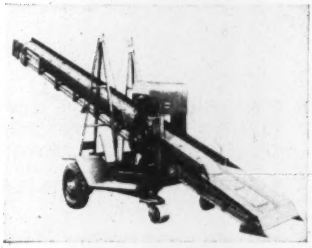
BRODERICK & BASCOM

Yellow Strand

PREFORMED WIRE ROPE

NEW PRODUCTS . . .

protective film that will not crack or chip. Powerfilm thins when stirred or brushed, and thickens on standing—therefore applies without running or sagging. It is particularly recommended for protecting equipment that stands out in all weather, such as unpainted chains, sprockets, or gears. It can also be used to prevent snow and ice from sticking to snow-removal equipment.—The Thomas Co., Chemical Coatings Div., 1645 Hennepin Ave., Minneapolis 3, Minn.



Troughed-belt conveyor

Model 638 power-moved troughed-belt conveyor is described as a heavy-duty materials handler. It features simplified drive and controls, improved maneuverability of individual wheel steering, hydraulically operated boom hoist, and self-equalizing casters for balance in yard operations.—Fairfield Engineering Co., Marion, Ohio.

Diesel-powered fork lift

Diesel fork lift truck features a hydraulic transmission. It is powered by a Hercules 6-cyl diesel with a continuous rating of 70-hp. Power is transmitted through a double-impeller fluid coupling. Long-wheel base (72 in.) and wide wheel tread provide stability and mobility. Chassis clearance is 9 in. Over-all height is 88¼ in. Primary lift is 66 in.—Yale & Towne Mfg. Co., Philadelphia Div., 11000 Roosevelt Blvd., Philadelphia 15, Pa.

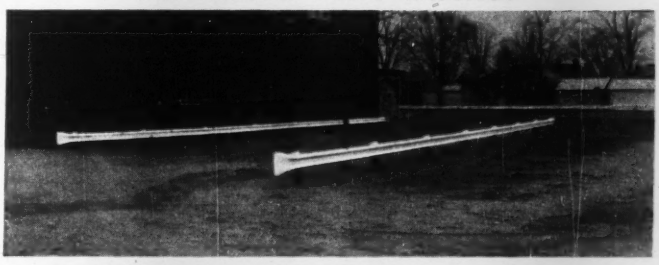
Air conditioners

Self-contained Model SU-81 air conditioner is rated at 8 tons. It is designed to cool, humidify, circulate, and filter the air. All-year-round air conditioning can be provided by addition of either steam or hot-water heating coils and an outside air duct connection. The Unitaires are factory-assem-

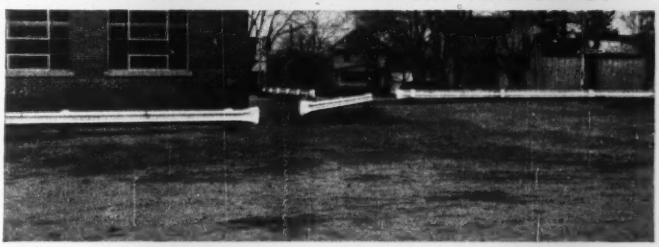
(Continued on page 135)

USF BARRIER-BEAM HIGHWAY GUARD RAIL

PROTECTS PLAY AREAS!



CONTROLS OFF-THE-STREET PARKING!



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USS STEEL

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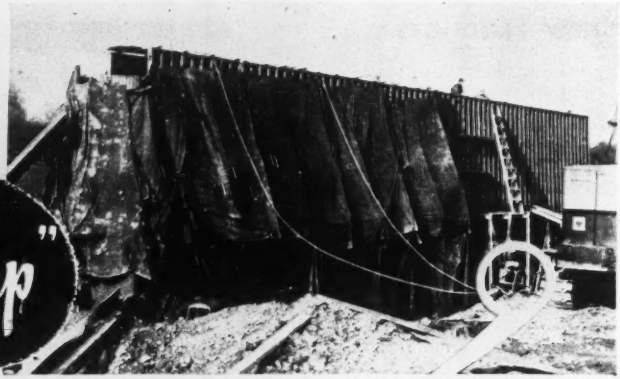
USF UNITED STEEL FABRICATORS, INC.

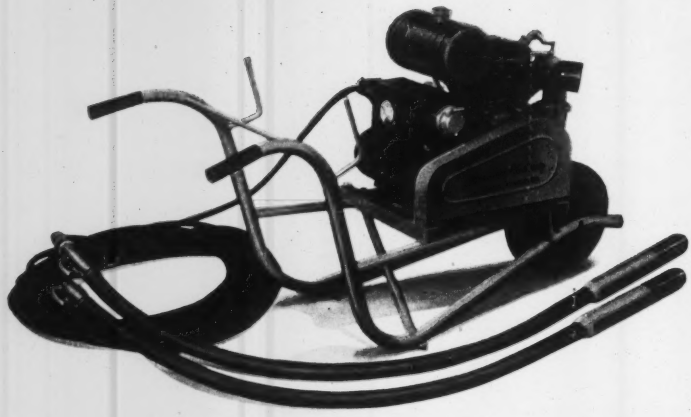
WOOSTER, OHIO

announcing...

"Master Champ"

HYCYCLE VIBRATOR





- ★ HIGHSPEED VIBRATOR 10,300 RPM. NO EXCESSIVE HEATING DURING NORMAL OPERATION
- ★ 2 SINGLE PHASE OUTLETS FOR 1200 WATTS LIGHTING
- ★ THOROUGHLY TESTED
- ★ COMPACT, LIGHT WEIGHT, VERY PORTABLE. WEIGHS ONLY 172 LBS.
- ★ WATER TIGHT CONNECTIONS
- ★ EASILY ACCESSIBLE AND REPLACEABLE FUSES

ELIMINATES FLEXIBLE SHAFT

provides vibration *anywhere within 300 feet*

This new MASTER power unit is really the CHAMP of portable hycycle vibrators . . . it moves easily from place to place on the job as it weighs only 172 pounds. It operates TWO Master Model HV-8 Hycycle Vibrators or 1200 watts of light . . . or one vibrator and 600 watts of light. And best of all . . . IT PROVIDES VIBRATION ANYWHERE WITHIN 300 FEET of the power unit.

The MASTER CHAMP is powered by a 4/4 H.P. Wisconsin gasoline single cylinder air-cooled engine at 3200 R.P.M. The vibrating unit provides high speed vibration at 10,300 R.P.M. Conductor cables and operating vibrator cables are available in various lengths.

WRITE TODAY STATING YOUR REQUIREMENTS.

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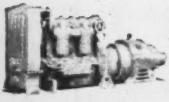
MASTER VIBRATOR COMPANY
101 Davis Avenue, Dayton 1, Ohio

Master portable generator plants —heavy duty dependable continuous and standby plants ½ KW to 100 KW



Master Power-Blow Hammer —world's most powerful electric hammer and spade

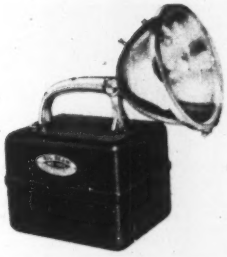
Gasoline Engine Backfill Tamper

Concrete surfacing attachments for vibrators

bled packaged units complete in every detail. — Westinghouse Electric Corp., Sturtevant Div., 200 Readville St., Hyde Park, Boston 36, Mass.

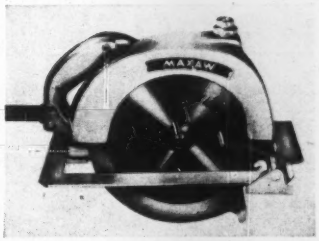
Life-Save vest

Life-Save vest is available for bridge workers, dock workers, and others working above water where the danger of drowning is present. Outside covering is a closely-woven drill cloth; filling is a highquality kapok. Vest is designed to permit free use of arms. Double-bend flexible waist line assures fit and comfort when bending over or sitting down.—Industrial Products Co., 2715a N. 4th St., Philadelphia 33, Pa.



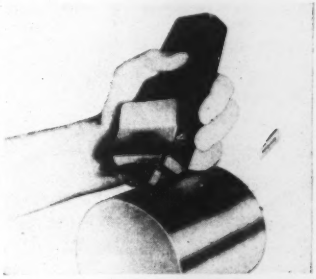
Portable hand lamp

Big Beam lamp No. 700-A throws a 2,000-ft light beam. Power is supplied by four standard No. 6 dry-cell batteries. The container has a waterproof base. The 6-in. adjustable lamphead has a silvered parabolic reflector. Two-way toggle switch controls the pre-focused main and auxiliary bulbs for bright and dim light.—U-C Lite Mfg. Co., 1050 W. Hubbard St., Chicago 22, Ill.



Portable 8-in., saw

Eight-inch Maxaw cuts 2⅞ in. on a square cut; 2⅛ in. at 45 deg. The motor is a universal ac/dc, 115-v special with a no-load speed of 4,600 rpm. It has a double-pole momentary contact switch with a 100% overload capacity. Standard equipment includes an 8-in. combination blade, wrench, and rip-fence guide.—Fred W. Wappat Div., Cummins Portable Tools, Mayville, N. Y.



Pipe-marking tool

Numbering tool uses ordinary flat-surface marking type for stamping convexed surfaces, such as rods, bars, tubes, pipes, and shafts. A segment piece blank placed between each piece of type provides the necessary curvature. Holders are available for handling 4, 6, 8, and 10-digit numbers. Type sizes range in 16ths and 32nds from 1/8 to ¼ in.—The Acromark Co., 515 Morrell St., Elizabeth 4, N. J.

Corrosion-resistant fittings

Welded fittings and joints for corrosion resistant coated piping are available in all standard sizes and types from ½ to 30 in. Turbulence is eliminated by having their internal diameter identical with that of the pipe. Standard fittings include concentric and eccentric reducers, 90-deg reducing elbows, lap-joint stub ends, 4-deg elbows, straight tees, reducing outlet tees, 180-deg return bends, and crosses.—Welstrom, 5th St. & N. Ford Blvd., Hamilton, Ohio.

Peace-Of-Mind PROPERTY PROTECTION

Enjoy the peace-of-mind protection you get with Continental fence...the only fence made of KONIK steel. KONIK is an open hearth alloy steel with copper, nickel, and chromium added for extra strength and extra resistance to rust and corrosion. Write Continental or see our nearest representative for complete information on Continental fence.

*Due to present National Defense requirements for nickel and chromium, two critical war materials, Continental fence will not be available in "Konik" steel for the duration of this emergency.

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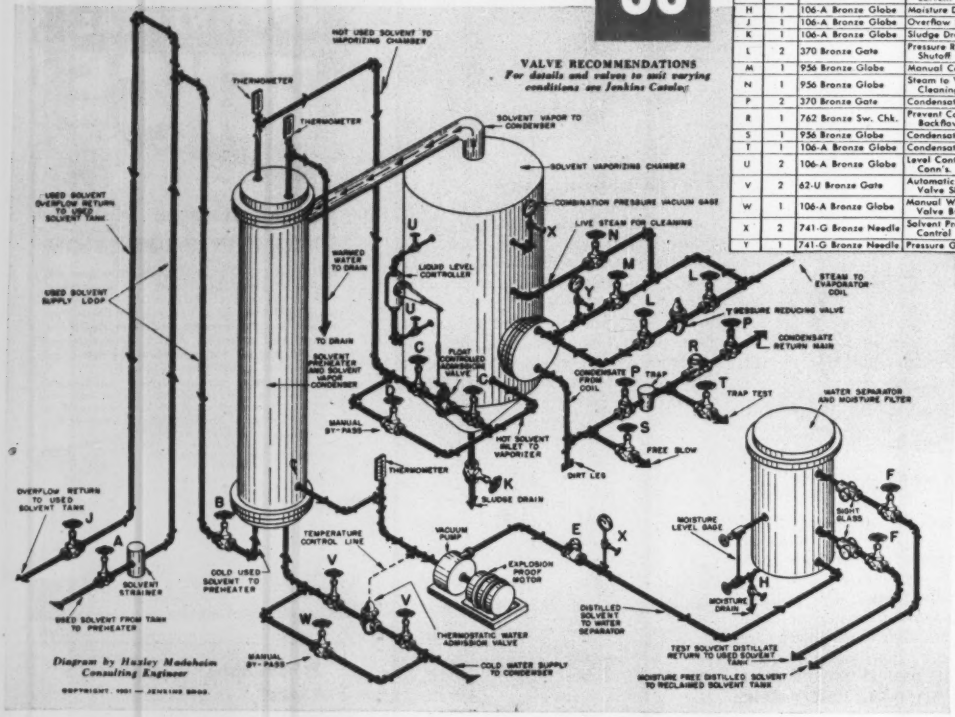
JENKINS PRACTICAL PIPING LAYOUTS

55



Code	Quan.	Jenkins Valves	Service
A	1	62-U Bronze Gate	Used Solvent Supply Shutoff
B	1	106-A Bronze Globe	Used Solvent to Preheater
C	2	62-U Bronze Gate	Float Controlled Valve Shutoff
D	1	106-A Bronze Globe	Manual By-Pass of Float Valve
E	1	92 Br. Sw. Check	Prevent Solvent Backflow
F	2	106-A Bronze Globe	Tank Connections for Distilled Solvent
H	1	106-A Bronze Globe	Moisture Drain
J	1	106-A Bronze Globe	Overflow Line Control
K	1	106-A Bronze Globe	Sludge Drain from Vaporizer
L	2	370 Bronze Gate	Pressure Reducing Valve Shutoff
M	1	956 Bronze Globe	Manual Control By-Pass
N	1	956 Bronze Globe	Steam to Vaporizer for Cleaning
P	2	370 Bronze Gate	Condensate Return
R	1	762 Bronze Sw. Chk.	Prevent Condensate Backflow
S	1	936 Bronze Globe	Condensate Free Blow
T	1	106-A Bronze Globe	Condensate Trap Test
U	2	106-A Bronze Globe	Level Controller Tank Conn's.
V	2	62-U Bronze Gate	Automatic Admission Water Valve Shutoff
W	1	106-A Bronze Globe	Manual Water Admission Valve By-Pass
X	2	741-G Bronze Needle	Solvent Pressure Gage Control
Y	1	741-G Bronze Needle	Pressure Gage Control

How to plan DRY CLEANING SOLVENT DISTILLATION PIPING CONNECTIONS

In the distillation system shown, used solvent is pumped from a storage tank through a strainer to a preheater. Here, cold solvent on the inside of the tubes is heated by the solvent vapors on the outside.

The heated solvent then passes through a liquid level controller to the solvent vaporizing chamber. A steam coil in the vaporizer further heats the solvent and causes it to boil off, since it has a lower boiling point than the impurities. A sludge drain valve is used to remove these impurities periodically from the bottom of vaporizer where they collect (hence a high vacuum is maintained).

The reclaimed solvent generally is returned to the used solvent storage tank for reprocessing. It is then passed through filter pads where any last traces of moisture are removed and stored in a tank for reuse.

The valve recommended for control of both hot and cold solvent is Jenkins Fig. 106-A Globe Valve. When ordered for use in dry cleaning solvent lines, valves are fitted with Jenkins No. 936-A synthetic composition discs. These are specifically designed to withstand the corrosive action of solvents, and provide vapor-tight closure for a long period before disc renewal is required.

Consultation with accredited piping engineers and contractors is recommended when planning any major piping installations.

A CHOICE OF OVER 500 VALVES

To save time, to simplify planning, to get all the advantages of Jenkins specialized valve engineering, select all the valves you need from the Jenkins Catalog. It's your best assurance of *lowest cost in the long run.* Jenkins Bros., 100 Park Ave., New York 17; Jenkins Bros., Ltd., Montreal.

COMPLETE DESCRIPTION AND ENLARGED DIAGRAM OF THIS LAYOUT FREE ON REQUEST. Includes additional detailed information. Mail coupon for your copy.

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LOOK FOR THE DIAMOND MARK
VALVES
SINCE 1864
TRADE JENKINS MARK
Jenkins Bros

MANUFACTURERS' PUBLICATIONS

The story of Kaylo—Kaylo calcium silicate products and their various uses are described in a new 24-p booklet. It serves to acquaint potential users with Kaylo and its various applications. First half of the booklet is devoted to research and development history of this hydrous calcium silicate product and a description of its properties.—Owens-Illinois Glass Co., Toledo 1, Ohio.

Flotation separator—Bulletin describes and illustrates the Sveen Pedersen separator. It contains complete information on the use, construction, and operation of the Flotation Saveall used for removal of suspended solids and partial removal of B.O.D. from waste water. The bulletin's number is FS-44.—Sveen Pedersen Sales Corp., 35-21 Eleventh St., Long Island City 6, N. Y.

Air mask—Bulletin CR-26 describes the Comfo respirator for protection where toxic or fibrosis-producing dusts are hazards. The catalog features a description of the new-type mineral-wool filter, of the compact filter holders, of the perforated metal filter covers, and of the special design for improved wearing comfort.—Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

Hose lines, detachable fittings—Catalog contains information about Aeroquip industrial products; tells how to order Aeroquip parts; and lists the construction and principles of Aeroquip hose lines and detachable, reusable fittings. It has a new loose-leaf arrangement permitting the insertion of additional catalogs or data sheets.—Aeroquip Corp., Jackson, Mich.

Tension load cell—Bulletin 325 describes the SR-4 Type P tension load cells. These cells are based on SR-4 bonded resistance wire strain gages for load measurement. The 2-p bulletin illustrates and gives specifications for load cells of four capacities between 10,000 and 100,000 lb.—Baldwin-Lima-Hamilton Corp., Testing Equipment Dept., Philadelphia 42, Pa.

Pipe-machine guide—Operating guide provides information on how to achieve the best results from portable pipe and bolt machines and hand pipe tools. This 4-p folder features simple pen-and-ink drawings and copy designed to tell quickly how to locate and correct troubles. It covers 31 different operations including: Correct use of threading oil; what to do about dies that are dull, chipped, or have developed stickers; how to check dies for proper rotation; how to overcome flat-sided threads; what to do about special thread, threads that are not standard, and threads that lack proper taper. Other data cover cutting; how to use driven geared tools; reaming; operation of oil pump; electrical data; and care of dies.—Beaver Pipe Tools, Inc., 334 Dana Ave., Warren, Ohio.

Caterpillar catalogs—Latest Caterpillar catalogs include Form 30186 on the new 8SR dozer especially designed for rock and other heavy-duty jobs; Form 30160 on the DW20 and DW21 tractors; and Form 30178 illustrating the wide usage of diesel-electric sets for various power applications.—Caterpillar Tractor Co., Peoria, Ill.

School sound-conditioning—Brochure covers the general subject of noise control in schools. It also lists the particular sound problems of specific areas. Illustrations show various types of Acousti-Celotex products featuring a description of the various decorative effects possible with these materials.—The Celotex Corp., 120 S. La-Salle St., Chicago 3, Ill.

Bucket loaders—Bulletin H 75-77 describes the Models 75, 77 and 75 SBC bucket loaders. These loaders have a capacity of 3 yd per min. The bulletin contains schematic drawings indicating various dimensions of each of the three models. One page of the bulletin is devoted to a complete listing of all general specifications. Photographs show typical applications.—George Haiss Mfg. Co., Inc., Div. of Pettibone Mulliken Corp., 141st St. & Park Ave., New York 51, N. Y.

Insulated record files—Folder 180-010 presents four models of 3 and 4-drawer letter files. The folder features a description of the various endurance, explosion, and impact tests to which these files have been subjected. Dimensions and features of construction are listed prominently.—Herring-Hall-Marvin Safe Co., Hamilton, Ohio.

Pulverizers and crushers—Catalog 837 describes a line of swing-hammer pul-

(Continued on page 139)

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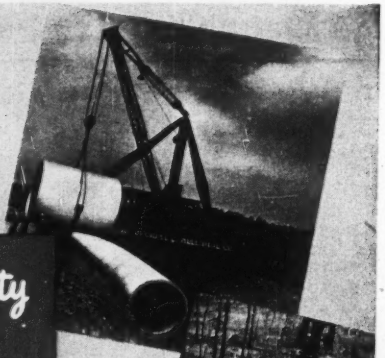

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CONCRETE PRESSURE PIPE

More than anyone else, those responsible for supplying water for domestic or industrial use appreciate the value of pipe lines which provide these four freedoms.

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- ★ Rupture or blow-out
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- ★ Loss of carrying capacity
- ★ Corrosion or deterioration

The water works man who installs Lock Joint Concrete Pressure Pipe will have trouble-free pipe lines. The careful design of Lock Joint Pressure Pipe does not permit blow-out or rupture; its dense concrete walls are immune to tuberculation, corrosion or electrolytic attack; and its useful life has been estimated by competent hydraulic engineers at more than 100 years. Among Lock Joint's strongest supporters are the water works officials who have installed this type of pipe and who point to it as the most economical in their systems.

• • •

If you are quality minded yet cost conscious, specify Lock Joint Pressure Pipe, secure in the knowledge that you are receiving the best value the pipe industry can provide.

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Est. 1905

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SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

Publications . . .

verizers and crushers. It is divided into two sections covering the Type A units for general purposes, and the Type B for finer reduction, breakdown, and heavier work. Theory of operation of these units is described in detail. Features of the component parts are also thoroughly explored. Complete specifications and dimensions are listed for each size in which these machines are produced—The Jeffrey Mfg. Co., 923 N. 4th St., Columbus 16, Ohio.

Lath fire resistance—Comprehensive summary covers fire resistance of metal lath and plaster. The summary contains four pages of tables listing 85 fire-resistance ratings ranging from 1 to 4 hr. The summary gives the thickness required in providing metal lath and plaster fire protection for columns, steel beams, girders and trusses, various floor assemblies, and steel roof deck assemblies. Commonly used types of partitions of metal lath and plaster are included.—Metal Lath Manufacturers Assn., Engineers Bldg., Cleveland 14, Ohio.

Low-bed-trailer brake—Electric brake for use on low-bed trailers is described in a 4-p folder. The bulletin explains how the brakes can be synchronized with hydraulic or air brakes on the prime mover. It also shows how the brake eliminates all under-trailer installations and accessories.—Warner Electric Brake & Clutch Co., Automotive Div., Beloit, Wis.

Industrial lighting—Sixteen-page booklet on lighting stresses how better lighting can cut costs, increase efficiency, and reduce accidents. Illustrations are included of various luminaires for fluorescent, mercury vapor, or incandescent lighting. Lighting for special areas is also illustrated.—Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Welders protective equipment—Four-page circular describes protective equipment for welders. It describes and illustrates a wide range of eye-protective devices for both gas and arc welding and includes product information on respiratory protection for welders. Accessories, such as rubber mask padding for goggles and Weld-Air lenses for welders who wear bifocal glasses, are also described. A full page is devoted to various types of filter glass, and includes a selector chart of types and shades for different welding operations.—Willson Products Inc., Reading, Pa.

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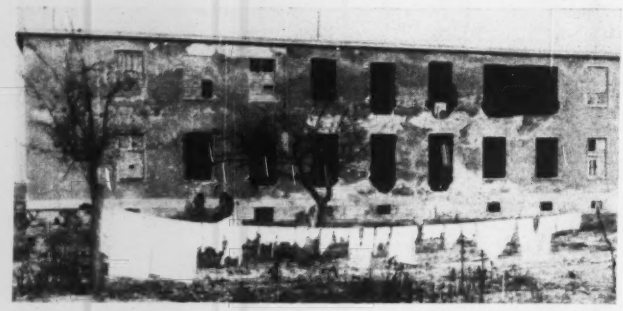


UNREGENERATE—and full of displaced persons, this former German Army consolidated mess is typical of the problem presented by the ancient and modern kasernes recently cleaned up and improved to house United States troops. Usually those buildings used by DP's were not converted for troop use.

Military barracks for Germany

Army engineers in Germany now face the problem of accommodating increased American forces in a densely populated country already short of suitable housing, and where land can not be spared from agricultural and industrial use to build large, U. S.-type military camps.

Since Germany previously maintained large armies, obvious solution is the use of Wehrmacht installations (Kasernes). Similar to battalion-size permanent posts in the United States, some date as far back as 1600.

But the program has difficulties. Resettlement of displaced persons and refugees from the East Zone have considerably reduced the number of vacant but livable units. A few of the very best have already been rehabilitated for troops already stationed here. And Kasern capacity is only enough to take care of little more than one American division—that one already stationed in Germany.

• **Kasernes forever**—The average kaserne is well built of permanent masonry construction. Standards of accommodation of the German army were high; i.e., moderate-sized rooms housed eight men (in contrast to our large 40-man squad rooms); hallways have tile floors; shower rooms are completely tiled; walls are soundproof.

The Corps of Engineers is restoring and modifying these installations for American troops. The problem is to get the job done between the time troop commitments are decided and actual troop arrivals. Buildings are restored to their 1939, standard, with modifications to bring sanitary facilities up to American standards. Kitchens have to be modified to provide additional facilities. (German armies evidently lived on boiled and stewed foods prepared in enormous steam kettles.)

The German army was stationed on the edge of its own communities and recreation was provided by public facilities in the German cities. Now recreational facilities on the German kaserne are deeply needed.

• **$2 million apiece**—More than 100 of these battalion-size kasernes are undergoing rehabilitation at a cost of $200 million. The cost is paid from the German economy.

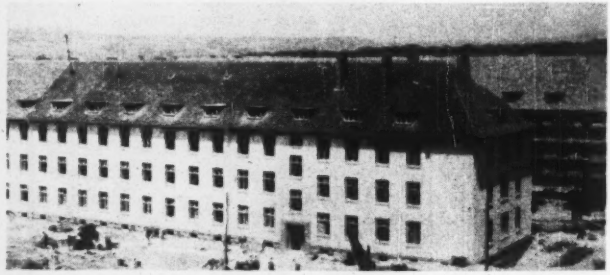
To start such a large program and to complete it in a short time has required considerable decentralization and maximum use of all types of German assistance. Construction work is performed under supervision of post engineers. Services of German architect-engineer firms are used in preliminary planning, advertising and negotiation. Additional work is involved because of lost "as-built" drawings.

Bids are taken from German contracting firms after requirements are determined. A unit-cost bid is usually received and final costs are negotiated as work progresses. Lack of time for precise surveys as well as for preparing complete specifications causes this. Sometimes German public agencies, such as the Land Finance Ministries, have taken over part of the work and acted for the post engineer on architect - engineer - manager contracts.

• **The exact German** — Material shortages has made imperative alterations and substitution during the course of the work. But a human element enters in. German contractors are not open-minded to changes in construction methods. They want to replace buildings exactly as they were. So it is impossible to use pre-fabrication to any extent.

In most places, it is almost necessary to complete restoration and rehabilitation in the same manner as original construction around the area being restored.

But many destroyed kasernes now stand as new again. Remodeled units rival anything to be offered on our best new military posts in the United States, and certainly exceed mobilization-type camps that constitute by far the great majority of our military housing in America.



REHABILITATED—and well on its way toward completion is this handsome embarrackment newly fitted out with adequate plumbing, the windows and walls reinstalled, and eight men to a room. German contractors insisted on restoring buildings with absolute accuracy and attention to previous details.

EVER WIN A COMPETITIVE BID BECAUSE OF A TRUCK CRANE?

Here's one contractor who did! As an example of the advantages inherent in MICHIGAN Truck Cranes, Mr. Gurtzweiler of Henry Gurtzweiler, Inc., Toledo, cited a competitive-bid job.

Other contractors figured on the necessity of using a large crane with long boom to reach from outside a building being erected. Gurtzweiler, taking advantage of his MICHIGAN'S compact size and maneuverability, planned to work from a central point *inside* the building. Result? Henry Gurtzweiler, Inc. got the job . . . another of the many on which the MICHIGAN has given them a competitive advantage.

Moreover, Mr. Gurtzweiler states that although the truck crane is five years old and never has had an idle day, it is still in perfect condition and has had very little maintenance. Why settle for less? Next time you need a truck crane . . . get a MICHIGAN!

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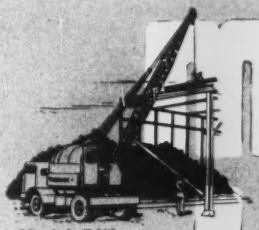
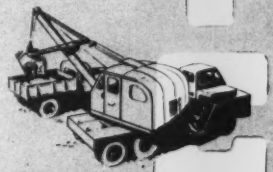
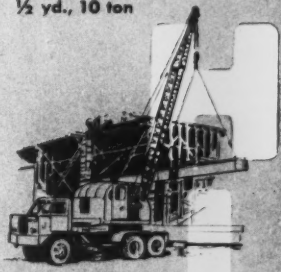
500 Second Street, Benton Harbor, Michigan, U. S. A.



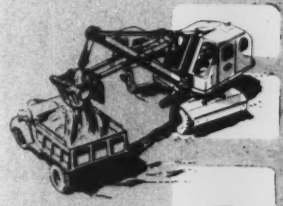
Model T6K
⅜ yd., 6 ton



Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton



Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

Does two jobs on the double with TIMKEN® bearings

THE photo below shows the new Adams TraveLoader picking up a heavy windrow of material excavated for pavement widening strips on an Illinois state highway. Built by J. D. Adams Manufacturing Company, the Timken® bearing equipped TraveLoader picks up and loads any kind of windrowed material, such as sod, gravel, bituminous mix, or scarified black top. And it actually loads as it travels!

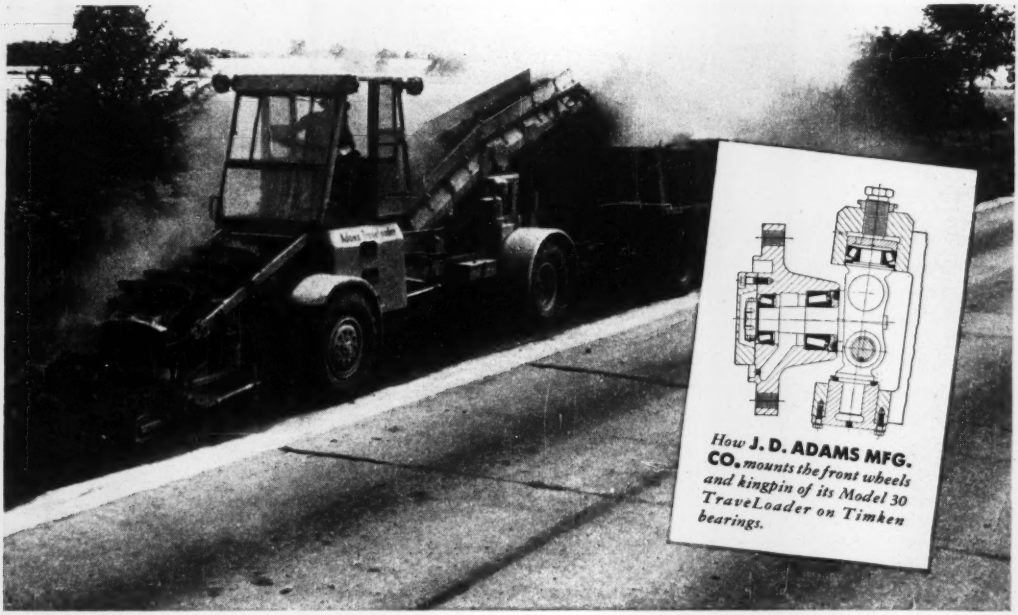
J. D. Adams mounts front wheels, kingpin, upper conveyor bevel gear drive and feeding mechanism bevel gear drive of the TraveLoader on Timken tapered roller bearings. With Timken bearings at these vital points, the TraveLoader is assured long life, minimum maintenance, trouble-free service. Loads are handled faster, with less wear on moving parts.

Timken bearings' true rolling motion plus an extremely smooth surface finish make friction negligible. Line contact between rollers and races gives extra load-carrying capacity. Tapered construction enables Timken bearings to take any combination of radial and thrust loads; moving parts are held in proper alignment.

Timken bearings permit tighter closures that keep out dirt and moisture, keep lubricant in. Maintenance time and material costs are cut to a minimum. And because they are made of Timken fine alloy steel, Timken bearings normally last the life of the machine.

You can get *all* these advantages by specifying bearings with the trademark "Timken" whenever you build or buy. They are backed by over 50 years of bearing research and development. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **J. D. ADAMS MFG. CO.** *mounts the front wheels and kingpin of its Model 30 TraveLoader on Timken bearings.*

IT'S TIMKEN BEARINGS FOR VALUE!

To get the best value in bearings you may find this simple formula helpful:

$$Value = \frac{quality + service + public\ acceptance}{price}$$

Obviously a big advantage *above* the line gives you more value than a small one *below*. No other bearing can match the uniform high quality, engineering and field service and overwhelming public acceptance you get with Timken bearings.

TIMKEN

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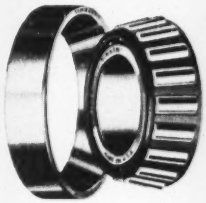
TAPERED ROLLER BEARINGS



NOT JUST A BALL ◯ NOT JUST A ROLLER ◯ THE TIMKEN TAPERED ROLLER ◯ BEARING TAKES RADIAL ◯ AND THRUST ◯ LOADS OR ANY COMBINATION